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**POWER OF ATTORNEY
and
CORRESPONDENCE ADDRESS
INDICATION FORM**

Application Number	See Exhibits A & B Attached hereto
Filing Date	
First Named Inventor	
Title	
Art Unit	
Examiner Name	
Attorney Docket Number	

I hereby revoke all previous powers of attorney given in the above-identified application.

I hereby appoint:

Practitioners associated with the Customer Number:

44989

OR

Practitioner(s) named below:

Name	Registration Number

as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith.

Please recognize or change the correspondence address for the above-identified application to:

The address associated with the above-mentioned Customer Number:

OR

The address associated with Customer Number:

OR

<input type="checkbox"/> Firm or Individual Name			
Address			
City	State	Zip	
Country			
Telephone	Email		

I am the:

Applicant/Inventor.

Assignee of record of the entire interest. See 37 CFR 3.71.
Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)

SIGNATURE of Applicant or Assignee of Record

Signature	<i>Katharine Ku</i>	Date	4/28/08
Name	Katharine Ku	Telephone	(650) 723-0651
Title and Company	Director, Technology Licensing	Stanford University	

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

*Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

EXHIBIT A TO POWER OF ATTORNEY

U.S. PATENT APPLICATIONS

U.S. SERIAL NO.	FILING DATE
11/209,687	08/24/2005
11/208,597	08/23/2005
11/671,363	02/05/2007
11/835,316	08/07/2007
11/835,314	08/07/2007

EXHIBIT B TO POWER OF ATTORNEY

U.S. PATENTS

U.S. PATENT NO.	ISSUE DATE
6,285,999	09/04/2001
7,058,628	06/06/2006
6,799,176	09/28/2004
7,269,587	09/11/2007

Electronic Acknowledgement Receipt

EFS ID:	3349835
Application Number:	09004827
International Application Number:	
Confirmation Number:	1715
Title of Invention:	METHOD FOR NODE RANKING IN A LINKED DATABASE
First Named Inventor/Applicant Name:	LAWRENCE PAGE
Customer Number:	44989
Filer:	Paul Harrity/Maggie Berndsen
Filer Authorized By:	Paul Harrity
Attorney Docket Number:	0026-0003
Receipt Date:	27-MAY-2008
Filing Date:	09-JAN-1998
Time Stamp:	14:52:36
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes) /Message Digest	Multi Part /.zip	Pages (if appl.)
1	Assignee showing of ownership per 37 CFR 3.73(b).	0026-0003_05-23-08_State ment.pdf	72924 <small>169c038f41a15ae054ef562ec13eab31361616da</small>	no	1

Warnings:

Information:

2	Power of Attorney	0026-0003_POA.pdf	129855 f12fbec47cb01c7d5309d3cd7f8c0a691 2b7223d	no	3
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Warnings:

Information:

Total Files Size (in bytes):	202779
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: Lawrence PAGE

Application No./Patent No.: 6,285,999

Filed/Issue Date: September 04, 2001

Entitled: METHOD FOR NODE RANKING IN A LINKED DATABASE

The Board of Trustees of the Leland Stanford Junior University, a corporation

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, etc.)

states that it is:

1. the assignee of the entire right, title, and interest; or
2. an assignee of less than the entire right, title and interest.
The extent (by, percentage) of its ownership interest is _____ %

in the patent application/patent identified above by virtue of either:

- A. An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel 9166, Frame 0035, or for which a copy thereof is attached.

OR

- B. A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as shown below:

1. From: _____ To: _____
The document was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.
2. From: _____ To: _____
The document was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.
3. From: _____ To: _____
The document was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

Additional documents in the chain of title are listed on a supplemental sheet.

- Copies of assignments or other documents in the chain of title are attached.

[NOTE: A separate copy (*i.e.*, the original assignment document or a true copy of the original document) must be submitted to Assignment Division in accordance with 37 CFR Part 3, if the assignment is to be recorded in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

May 23, 2008

Date

Paul A. Harrity

Typed or printed name

/Paul A. Harrity, Reg. No. 39,574/

Signature

Attorney for Assignee

Title

PART B—ISSUE FEE TRANSMITTAL

Complete and mail this form, together with applicable fees, to:

ISSUE FEE
 Assistant Commissioner for Patents
 Washington, D.C. 20231

hm
 JUL 11 2001

B #

MAILING INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE. Blocks 1 through 4 should be completed where appropriate. All further correspondence including the Issue Fee Receipt, the Patent, advance maintenance fee notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

Note: The certificate of mailing below can only be used for domestic mailings of the Issue Fee Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing.

Certificate of Mailing

I hereby certify that this Issue Fee Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Box Issue Fee address above on the date indicated below.

CURRENT CORRESPONDENCE ADDRESS (Note: Legibly mark-up with any corrections or use Block 1)

026615
 HARRITY & SNYDER, LLP
 11240 WAPLES MILL ROAD
 SUITE 300
 FAIRFAX VA 22030

TM31/0423

(Depositor's name)

(Signature)

(Date)

APPLICATION NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT	DATE MAILED
09/004,827	01/09/98	008 29	LE, U 2171	04/23/01
First Named Applicant	PAGE,		35 USC 154(b) term ext. = 0 Days.	

TITLE OF INVENTION: METHOD FOR NODE RANKING IN A LINKED DATABASE

OK to Enter

ATTY'S DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPLN. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
2 996-213	707-500.000	F39	UTILITY	YES	\$520.00 \$1,240.00	07/23/01

1. HARRITY & SNYDER L.L.P.
 2. _____
 3. _____

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363). Use of PTO form(s) and Customer Number are recommended, but not required.
 Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
 "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47) attached.

2. For printing on the patent front page, list (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)
 PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. Inclusion of assignee data is only appropriate when an assignment has been previously submitted to the PTO or is being submitted under separate cover. Completion of this form is NOT a substitute for filing an assignment.
 (A) NAME OF ASSIGNEE THE BOARD OF TRUSTEES OF THE LELAND STANFORD JUNIOR UNIVERSITY
 (B) RESIDENCE: (CITY & STATE OR COUNTRY) STANFORD, CALIFORNIA
 Please check the appropriate assignee category indicated below (will not be printed on the patent)
 Individual corporation or other private group entity government

4a. The following fees are enclosed (make check payable to Commissioner of Patents and Trademarks):
 Issue Fee
 Advance Order - # of Copies 1

4b. The following fees or deficiency in these fees should be charged to:
 DEPOSIT ACCOUNT NUMBER 50-1070
 (ENCLOSE AN EXTRA COPY OF THIS FORM)
 Issue Fee
 Advance Order - # of Copies _____

The COMMISSIONER OF PATENTS AND TRADEMARKS IS requested to apply the Issue Fee to the application identified above.

(Authorized Signature) PAUL A. HARRITY REG. NO. 39,578 (Date) 7-11-01

NOTE: The Issue Fee will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the Patent and Trademark Office.

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending on the needs of the individual case. Any comments on the amount of time required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, D.C. 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND FEES AND THIS FORM TO: Box Issue Fee, Assistant Commissioner for Patents, Washington D.C. 20231

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07/13/2001 BABR042 0000014 09004827
 1240.00
 3.00
 01 Ff:142
 02 Ff:561

TRANSMIT THIS FORM WITH FEE



Patent
Attorney's Docket No. S96-213 (0026-0003)

GB
* CA
#27
8/2/01
A.W

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of	)	Batch No.: F39
Lawrence PAGE	)	Group Art Unit: 2171
Application No.: 09/004,827	)	Examiner: U. Le
Filed: January 9, 1998	)	Notice of Allowance Dated: 04-23-01
For: METHOD FOR NODE	)	BOX: ISSUE FEE
RANKING IN A LINKED)	
DATABASE)	

MATCH & RETURN

LETTER RE
CORRECTED NOTICE OF ALLOWANCE AND ISSUE FEE DUE

Commissioner of Patent and Trademarks
Washington, D.C. 20231

Sir:

Applicant respectfully requests that the Issue Fee Transmittal mailed on April 23, 2001 reflect the correct number of claims as indicated on the Notice of Allowability. The correct number of claims is 29.

Applicant also would like to change its status from small entity to large entity, such that all future maintenance fees be issued in accordance with large entity status.

04/01

The Commissioner is hereby authorized to charge any appropriate fees under 37 C.F.R. §§ 1.16, 1.17, 1.20(d) and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 50-1070.



26615

PATENT TRADEMARK OFFICE

Respectfully submitted,

HARRITY & SNYDER, L.L.P.

By:

A handwritten signature in black ink, appearing to read 'PAUL A. HARRITY', written over a horizontal line.

Paul A. Harrity
Reg. No. 39,574

11240 Waples Mill Road
Suite 300
Fairfax, Virginia 22030
(571) 432-0800

Date: July 11, 2001

B MA #68

Patent
Attorney's Docket No. S96-213



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of)	
)	
Lawrence PAGE	)	Group Art Unit: 2171
)	
Application No.: 09/004,827	)	Examiner: Le, U.
)	
Filed: January 9, 1998	)	NOTICE OF ALLOWANCE DATED: April 23, 2001
)	
For: METHOD FOR NODE RANKING IN A LINKED DATABASE	)	BATCH NO.: F39
)	

SUBMISSION OF FORMAL DRAWINGS

BOX: ISSUE FEE
Commissioner of Patent and Trademarks
Washington, D.C. 20231

Sir:

Subject to the approval of the Examiner, please replace the informal drawings with the formal drawings filed herewith. If the formal drawings for any reason are not in full compliance with the pertinent statutes and regulations, please so advise the undersigned.

If any fees are necessary for the submission of these formal drawings, please charge our Deposit Account No. 50-1070.

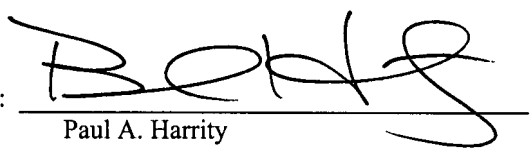
Respectfully submitted,

HARRITY & SNYDER, L.L.P.



26615

PATENT TRADEMARK OFFICE

By: 
Paul A. Harrity
Reg. No. 39,574

11240 Waples Mill Road
Suite 300
Fairfax, Virginia 22030
(571) 432-0800

Date: May 2, 2001

6285999

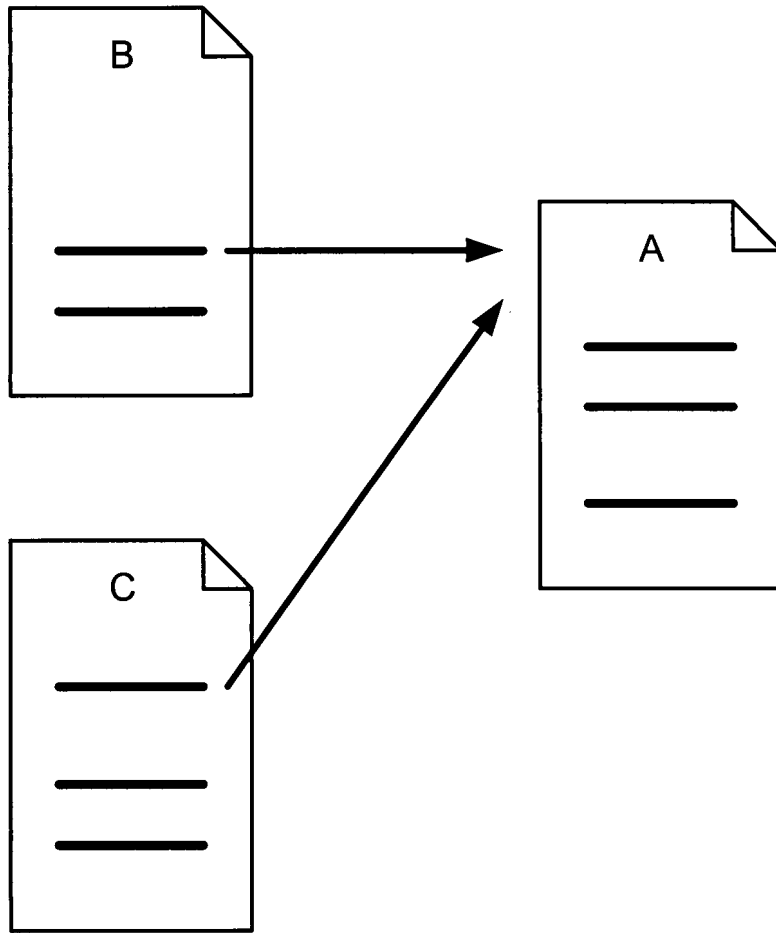


FIG. 1

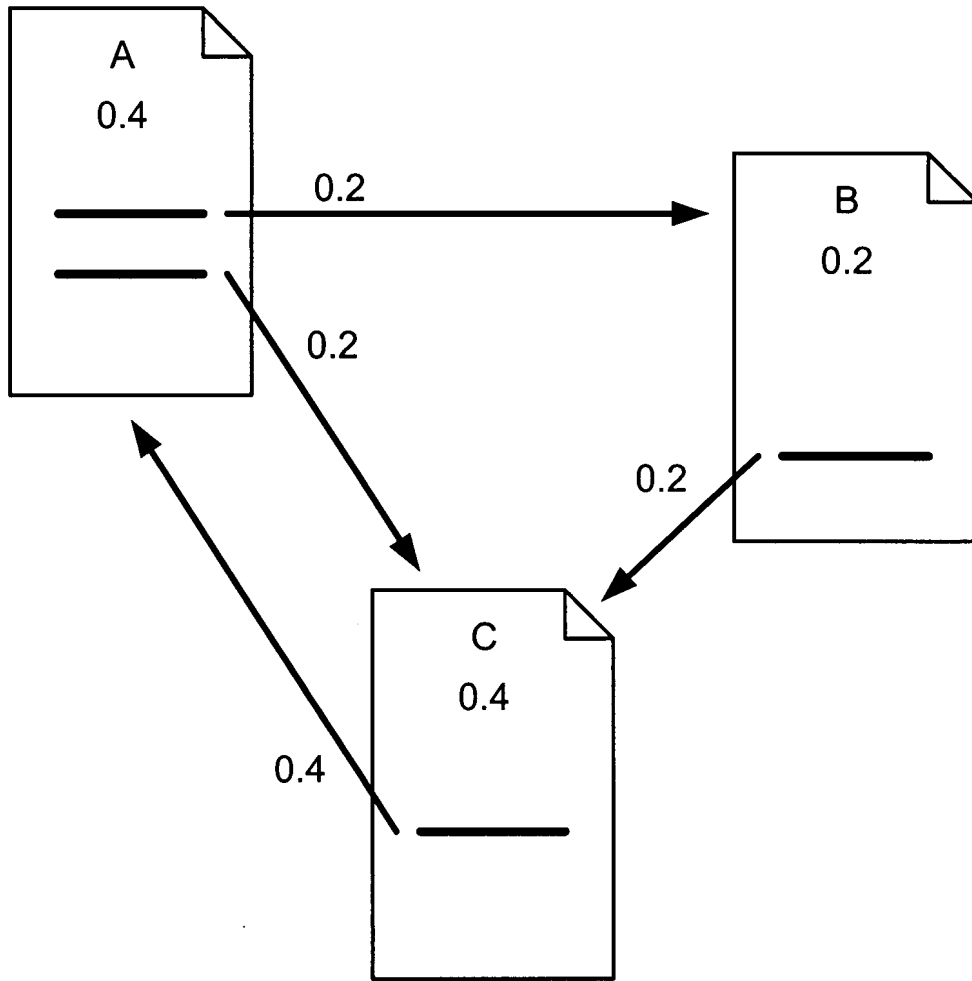


FIG. 2

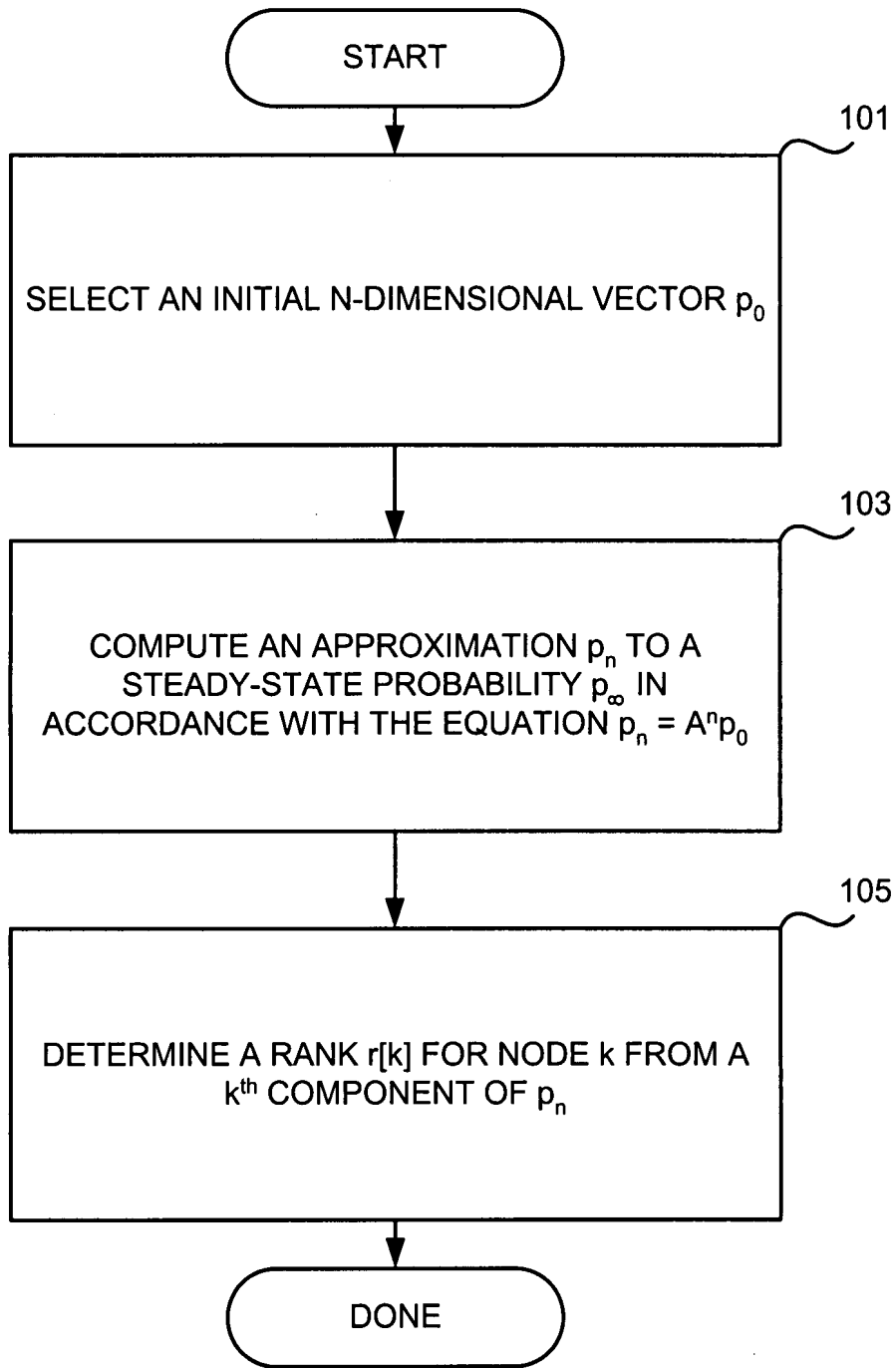


FIG. 3



NOTICE OF ALLOWANCE AND ISSUE FEE DUE

026615
HARRITY & SNYDER, LLP
11240 WAPLES MILL ROAD
SUITE 300
FAIRFAX VA 22030

TM31/0802

APPLICATION NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT	DATE MAILED
09/004,527	01/09/98	029	LE, U	2171 04/23/01
First Named Applicant	PAGE,	35 USC 154(b) term ext. =		0 Days.

TITLE OF INVENTION: METHOD FOR NODE RANKING IN A LINKED DATABASE

ATTY'S DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPLN. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
2	S96-213	707-500.000	F39	UTILITY	NO	\$1240.00 07/23/01

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED.

THE ISSUE FEE MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED.

HOW TO RESPOND TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.
If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

- A. If the status is changed, pay twice the amount of the FEE DUE shown above and notify the Patent and Trademark Office of the change in status, or
- B. If the status is the same, pay the FEE DUE shown above.

If the SMALL ENTITY is shown as NO:

- A. Pay FEE DUE shown above, or
- B. File verified statement of Small Entity Status before, or with, payment of 1/2 the FEE DUE shown above.

II. Part B-Issue Fee Transmittal should be completed and returned to the Patent and Trademark Office (PTO) with your ISSUE FEE. Even if the ISSUE FEE has already been paid by charge to deposit account, Part B Issue Fee Transmittal should be completed and returned. If you are charging the ISSUE FEE to your deposit account, section "4b" of Part B-Issue Fee Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give application number and batch number.
Please direct all communications prior to issuance to Box ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PATENT AND TRADEMARK OFFICE COPY



NOTICE OF ALLOWANCE AND ISSUE FEE DUE

TM31/0423

026615
HARRITY & SNYDER, LLP
11240 WAPLES MILL ROAD
SUITE 300
FAIRFAX VA 22030

APPLICATION NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT	DATE MAILED
09/004,827	01/09/98	008	LE, U 2171	04/23/01
First Named Applicant	PAGE.		35 USC 154(b) term ext.	0 Days

TITLE OF INVENTION: METHOD FOR NODE RANKING IN A LINKED DATABASE

ATTYS DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPLN. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
2	996-213	707-500.000	F39 UTILITY	YES	\$620.00	07/23/01

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED.

THE ISSUE FEE MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED.

HOW TO RESPOND TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

- A. If the status is changed, pay twice the amount of the FEE DUE shown above and notify the Patent and Trademark Office of the change in status, or
- B. If the status is the same, pay the FEE DUE shown above.

If the SMALL ENTITY is shown as NO:

- A. Pay FEE DUE shown above, or
- B. File verified statement of Small Entity Status before, or with, payment of 1/2 the FEE DUE shown above.

II. Part B-Issue Fee Transmittal should be completed and returned to the Patent and Trademark Office (PTO) with your ISSUE FEE. Even if the ISSUE FEE has already been paid by charge to deposit account, Part B Issue Fee Transmittal should be completed and returned. If you are charging the ISSUE FEE to your deposit account, section "4b" of Part B-Issue Fee Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give application number and batch number. Please direct all communications prior to issuance to Box ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PATENT AND TRADEMARK OFFICE COPY

Notice of Allowability

Application No.

09/004,827

App. It(s)

Page

Examiner

Uyen Le

Group Art Unit

2171



All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance and Issue Fee Due or other appropriate communication will be mailed in due course.

This communication is responsive to the amendment filed 6 February 2001.

The allowed claim(s) is/are 18-25, 28, 36-55 renumbered as 1-29.

The drawings filed on _____ are acceptable.

Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

All Some* None of the CERTIFIED copies of the priority documents have been

received.

received in Application No. (Series Code/Serial Number) _____.

received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

A SHORTENED STATUTORY PERIOD FOR RESPONSE to comply with the requirements noted below is set to EXPIRE **THREE MONTHS** FROM THE "DATE MAILED" of this Office action. Failure to timely comply will result in ABANDONMENT of this application. Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL APPLICATION, PTO-152, which discloses that the oath or declaration is deficient. A SUBSTITUTE OATH OR DECLARATION IS REQUIRED.

Applicant MUST submit NEW FORMAL DRAWINGS

because the originally filed drawings were declared by applicant to be informal.

including changes required by the Notice of Draftsperson's Patent Drawing Review, PTO-948, attached hereto or to Paper No. 6.

including changes required by the proposed drawing correction filed on _____, which has been approved by the examiner.

including changes required by the attached Examiner's Amendment/Comment.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the reverse side of the drawings. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Any response to this letter should include, in the upper right hand corner, the APPLICATION NUMBER (SERIES CODE/SERIAL NUMBER). If applicant has received a Notice of Allowance and Issue Fee Due, the ISSUE BATCH NUMBER and DATE of the NOTICE OF ALLOWANCE should also be included.

Attachment(s)

Notice of References Cited, PTO-892

Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

Notice of Draftsperson's Patent Drawing Review, PTO-948

Notice of Informal Patent Application, PTO-152

Interview Summary, PTO-413

Examiner's Amendment/Comment

Examiner's Comment Regarding Requirement for Deposit of Biological Material

Examiner's Statement of Reasons for Allowance

THOMAS BLACK
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

DETAILED ACTION

Allowable Subject Matter

1. Claims 18-25, 28, 36-55 renumbered as 1-29 are allowed.

The following is an examiner's statement of reasons for allowance: the prior art of record does not disclose or suggest

- Assigning a score to linked documents based on scores of the linking documents and processing the linked documents according to their scores as recited in claims 18, 25;
- Ranking a plurality of documents by generating an initial estimate of a rank for each of the linked documents, updating the estimate using the ranks of the linking documents and processing the linked documents according to the updated ranks as recited in claim 28;
- Automatically performing a random traversal of a plurality of linked documents, for each document that is traversed, assigning a rank to the linked document that is dependent on the number of times the linked document has been traversed and processing the plurality of linked documents according to their ranks as recited in claims 36.

Claims 44, 45 correspond to a computer program product for method claim 18, thus are allowable for the same reasons stated in claim 18 above. Claims 19-24, 37-43, 46-55 being further limiting and definite are also allowable.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

Art Unit: 2171

accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

2. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kirsch et al (US 5,920,854) teach a real-time document collection search engine with phrase indexing.

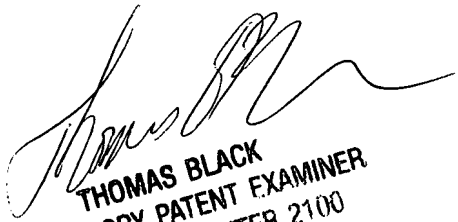
Spencer (US 5,915,249) teaches a system and method for accelerated query evaluation of very large full-text databases.

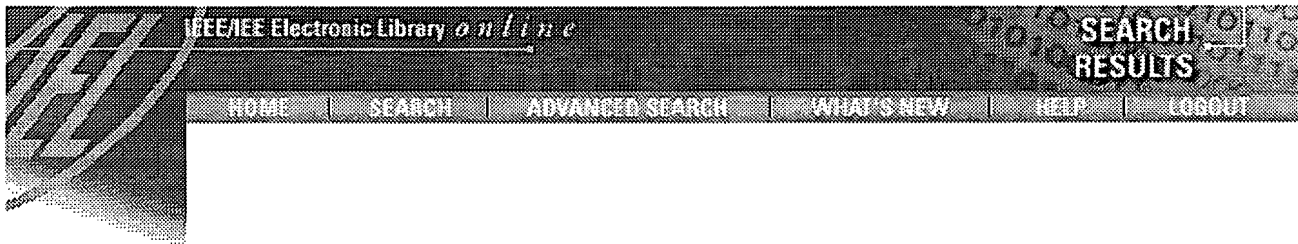
3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Uyen T Le whose telephone number is 703-305-4134. The examiner can normally be reached on M-T 7:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on 305-9707. The fax phone numbers for the organization where this application or proceeding is assigned is 308-9051 for all communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 305-9000.

UL
April 22, 2001


THOMAS BLACK
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100



probability weight Refine

Collection: Journals Conferences Standards

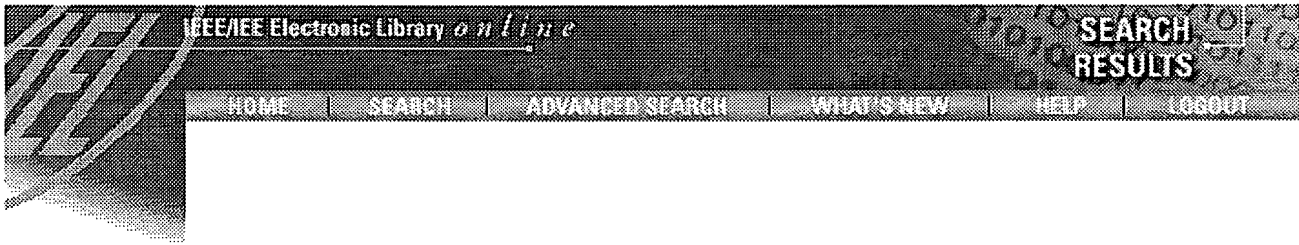
Your search matched 5 of 671461 documents.

5 are presented on this page, sorted by Score in descending order.

DOC TYPE	VIEW ISSUE TOC	VIEW FULL PAGE	VIEW CITATION
CNF			<p><u>Improved combined radar/radiometer rain profiling</u> Haddad, Z.S.; Meagher, J.P. Geoscience and Remote Sensing Symposium, 2000. Proceedings. IGARSS 2000. IEEE 2000 International Volume: 3 , 2000 , Page(s): 1349 -1351 vol.3</p>
PER			<p><u>Detection of interference/jamming and spoofing in a DGPS-aided inertial system</u> White, N.A.; Maybeck, P.S.; DeVilbiss, S.L. Aerospace and Electronic Systems, IEEE Transactions on Volume: 34 4 , Oct. 1998 , Page(s): 1208 -1217</p>
CNF			<p><u>Similarity, probability and database organisation</u> Ramer, A.; Yu, H.-R. Fuzzy Systems Symposium, 1996. Soft Computing in Intelligent Systems and Information Processing., Proceedings of the 1996 Asian , 1996 , Page(s): 272 -277</p>
CNF			<p><u>The other variant Boltzmann machine</u> Liou, C.-Y.; Lin, S.-L. Neural Networks, 1989. IJCNN., International Joint Conference on , 1989 , Page(s): 449 -454 vol.1</p>
PER			<p><u>Competitive optimality of source codes</u> Yamamoto, H.; Itoh, T. Information Theory, IEEE Transactions on Volume: 41 6 2 , Nov. 1995 , Page(s): 2015 -2019</p>

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CNF			<p><u>User-centered filtering and document ranking</u> Seon-Mi Woo; Chun-Sik Yoo; Yong-Sung Kim TENCON 99. Proceedings of the IEEE Region 10 Conference Volume: 2 , 1999 , Page(s): 1059 -1062 vol.2</p>
CNF			<p><u>A Bayesian neural network model for dynamic web document clustering</u> Jun-Hui Her; Sung-Hae Jun; Jun-Heyog Choi; Jung-Hyun Lee TENCON 99. Proceedings of the IEEE Region 10 Conference Volume: 2 , 1999 , Page(s): 1415 -1418 vol.2</p>
CNF			<p><u>Search and ranking algorithms for locating resources on the World Wide Web</u> Yuwono, B.; Lee, D.L. Data Engineering, 1996. Proceedings of the Twelfth International Conference on , 1996 , Page(s): 164 -171</p>
PER			<p><u>Proceedings Seventh International Symposium on String Processing and Information Retrieval. SPIRE 2000</u> Fuzzy Systems, IEEE Transactions on Volume: 8 5 , Oct. 2000</p>
PER			<p><u>Enabling concept-based relevance feedback for information retrieval on the WWW</u> Chia-Hui Chang; Ching-Chi Hsu Knowledge and Data Engineering, IEEE Transactions on Volume: 11 4 , July-Aug. 1999 , Page(s): 595 -609</p>
PER			<p><u>Document ranking and the vector-space model</u> Lee, D.L.; Huei Chuang; Seamons, K.</p>

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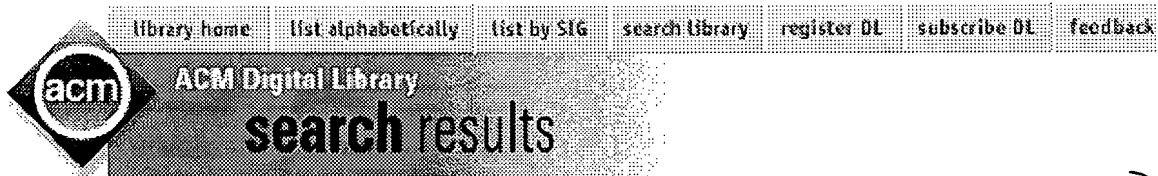
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- the extended Boolean retrieval framework;
Joon Ho Lee, Won Yong Kin, Myoung Ho Kim
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Information Retrieval*, 1993, Pages 291 -
297 [[Find Related Articles](#)]
- 7) An experimental study of factors important
in document ranking; Donna Williamson
Harman; *Proceedings of 1986 ACM
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information retrieval*, 1986, Pages 186 - 193
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- 8) ANNOD: a navigator of natural-language
organized (textual) data; Robert E.
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international ACM SIGIR conference on
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retrieval*, 1985, Pages 252 - 266
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- 9) Spatial match representation scheme
supporting ranking in iconic images
databases; Yeon-Jung Kim, Choon-Bo Sim
and Jae-Woo Chang; *Proceedings of the
eighth international conference on
Information knowledge management*, 1999,
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- 10) Implementing ranking strategies using text
signatures; W. Bruce Croft and Pasquale
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method for n-gram indexing; Ogawa
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- 13) [Using a belief revision operator for document ranking in extended Boolean models](#); David E. Losada and Alvaro Barreiro; *Proceedings of the 22nd annual international ACM SIGIR conference on Research and development in information retrieval*, 1999, Pages 66 - 73
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- 14) [Output ranking methodology for document-clustering-based Boolean retrieval systems](#); Tadeusz Radecki; *Proceedings of the eighth annual international ACM SIGIR conference on Research and development in information retrieval*, 1985, Pages 70 - 76
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- 15) [Using structural representation of anomalous states of knowledge for choosing document retrieval strategies](#); N. J. Belkin and B. H. Kwa´nik; *Proceedings of 1986 ACM conference on Research and development in information retrieval*, 1986, Pages 11 - 22
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- 16) [A probabilistic relational model for the integration of IR and databases](#); Norbert Fuhr; *Proceedings of the sixteenth annual international ACM SIGIR conference on Research and Development in Information Retrieval*, 1993, Pages 309 - 317
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#25/E
2-8-01
M. Hilliard

PATENT
Attorney Docket No. S96-213 (0026-0003)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Lawrence PAGE

Serial No.: 09/004,827

Filed: January 9, 1998

For: METHOD FOR NODE RANKING
IN A LINKED DATABASE



Group Art Unit: 2171

Examiner: U. Le

Commissioner for Patents
Washington, D.C. 20231

Sir:

AMENDMENT

In response to the Office Action of December 5, 2000, please amend this application as follows:

IN THE SPECIFICATION:

~~Page 4,~~

~~line 4, change "OBJECTS AND ADVANTAGES" to --SUMMARY--;~~

~~line 5, change "Accordingly, it is a primary object" to --Various aspects--;~~

~~line 5, delete "to";~~

~~line 6, change "a method" to --systems and methods--;~~

~~line 6, change "It" to --One aspect--;~~

~~delete line 7;~~

~~line 9, change "object" to --aspect--;~~

~~line 9, change "to provide" to --directed to--;~~

~~line 11, change "object" to --aspect--;~~

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~~line 14, change "objects and advantages" to --aspects of the invention--;~~

~~delete line 18;~~

~~line 19, change "The" to --One aspect of the--;~~

~~line 19, change "achieves the above objects by" to --is directed to--;~~

~~line 23, after "relevance" insert --only--;~~

~~line 24, change "the" (third occurrence) to --a--;~~

~~line 25, delete "present";~~

~~line 25, after "method" insert --consistent with the invention--; and~~

~~line 28, after "are" insert --necessarily--.~~

~~Page 5,~~

~~line 20, change "calculating an importance rank for N linked nodes" to~~

~~--scoring--;~~

~~line 21, change "of a linked database" to --linked documents--; and~~

~~lines 23-34, delete this section in its entirety and in its place insert:~~

~~—obtaining a plurality of documents, at least some of the documents being linked documents, at least some of the documents being linking documents, and at least some of the documents being both linked documents and linking documents, each of the linked documents being pointed to by a link in one or more of the linking documents; assigning a score to each of the linked documents based on scores of the one or more linking documents; and processing the linked documents according to their scores.~~

~~Additional aspects, applications and advantages will become apparent in view of the following description and associated figures.—~~

~~Page 6,~~

~~delete lines 1-9 in their entirety;~~

~~line 23, change "preferred embodiment" to --embodiments--; and~~

~~line 24, change "is" to --are.~~

~~Page 11,~~

~~line 27, change "a preferred" to --one particular--.~~

~~Page 12,~~

~~line 6, change "a preferred" to --another particular--; and~~

~~line 27, change "There" to --Consistent with the present invention, there--.~~

~~Page 14,~~

~~line 8, change "The present method has" to --Various implementations of the~~

~~invention have--.~~

~~Page 15,~~

~~line 10, change "Perhaps the most" to --Another--;~~

~~line 10, after "application" insert --and embodiment--;~~

~~line 10, delete "ranking";~~

~~line 11, change "technique is to enhance" to --invention is directed to
enhancing--;~~

~~line 12, change "the" (second occurrence) to --a--;~~

~~line 13, change "of" to --according to--;~~

~~line 15, change "the" to --a--;~~

~~line 16, change "has all the advantages of" to --provides--;~~

~~line 22, change "according to the method" to --as described above in connection~~

E³ with various exemplary embodiments--; and

~~line 28, change "idea" to --approach--.~~

~~Page 16,~~

~~line 13, delete "defined as"; and~~

~~line 19, change "embodiment" to --embodiments--.~~

IN THE CLAIMS:

Please amend claim 36 as follows:

36. (Twice Amended) A computer implemented method of ranking a plurality of

linked documents, comprising:

E⁴ automatically performing a random traversal of a plurality of linked documents, [wherein performing a] the random traversal [includes] including selecting a random link to traverse in a current linked document;

for each linked document that is traversed, assigning a rank to the linked document that is dependent on the number of times the linked document has been traversed; and

processing the plurality of linked documents according to their rank.

Please add new claims 46-55 as follows:

E⁵ 46. The method of claim 18, wherein the assigning a score includes:

determining the score based on (1) a number of the linking documents that link to the

linked document and (2) an importance of the linking documents.

~~21~~
47. The method of claim ~~46~~²⁰, wherein the importance of the linking documents is based on a number of documents that link to the linking documents.

~~22~~
48. The method of claim ~~18~~¹, wherein the assigning a score includes:
associating one or more backlinks with each of the linked documents, each of the backlinks corresponding to one of the linking documents that links to the linked document, assigning a weight to each of the backlinks, and determining a score for each of the linked documents based on a number of backlinks for the linked document and the weights assigned to the backlinks.

ES
~~23~~
49. The method of claim ~~48~~²⁰, wherein the processing of the linked documents includes:
organizing the linked documents based on the determined scores.

~~24~~
50. The method of claim ~~48~~²⁰, wherein the assigning a weight includes:
assigning different weights to at least some of the backlinks associated with at least one of the linked documents.

~~25~~
51. The method of claim ~~18~~¹, wherein the assigning a score includes:
associating one or more backlinks with each of the linked documents, each of the backlinks corresponding to one of the linking documents that links to the linked document, assigning a weight to each of the backlinks, and

determining a score for each of the linked documents based on a sum of the weights assigned to the backlinks associated with the linked document.

²⁶52. The method of claim ²⁵51, wherein the weights assigned to each of the backlinks are independent of text of the corresponding linking documents.

²¹53. The method of claim ¹18, wherein the assigning a score includes: determining the score primarily based on linking information.

²⁸54. The method of claim ¹18, wherein the assigning a score includes: determining the score substantially independent of user-query content.

²⁹55. The method of claim ¹18, wherein the assigning a score includes: iteratively determining the score for a linked document, the score being primarily based on document-linking information and substantially independent of user-query content.

E-5

REMARKS

In the Office Action, the Examiner rejected claims 18, 25, 28, and 38-45 under 35 U.S.C. § 102(a) as anticipated by Ishikawa et al. (U.S. Patent No. 5,848,407); rejected claims 19 and 23 under 35 U.S.C. § 103(a) as unpatentable over Ishikawa et al.; rejected claim 20 under 35 U.S.C. § 103(a) as unpatentable over Ishikawa et al. in view of Applicant's allegedly admitted prior art; rejected claims 21, 22, and 24 under 35 U.S.C. § 103(a) as unpatentable over Ishikawa et al. in view of Egger et al. (U.S. Patent No. 5,832,494); and rejected claims 36 and 37 under 35 U.S.C. § 103(a) as unpatentable over Applicant's allegedly admitted prior art in view of Egger et al.

32

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By this Amendment, Applicant has amended the specification and claim 36 to improve form and has added new claims 46-55. Applicant respectfully traverses the Examiner's rejections under 35 U.S.C. §§ 102 and 103.

Applicant would like to thank Examiner Le and Primary Examiner Amsbury for the courtesies extended during the telephone interview that took place on February 5, 2001. In the interview, the Examiners indicated that further investigation would be required to necessarily conclude that the Ishikawa et al. patent is not prior art under any part of 35 U.S.C. § 102, as argued by Applicant. Examiner Le also indicated that the enclosed change to claim 36 appears to overcome the prior art rejection of record.

The Examiner rejected pending claims 18, 25, 28, and 38-45 under 35 U.S.C. § 102(a) as allegedly anticipated by Ishikawa et al. Applicant respectfully submits that Ishikawa et al. is not prior art under 35 U.S.C. § 102(a). 35 U.S.C. § 102(a) prohibits an Applicant from obtaining a patent if the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the Applicant for patent.

In this case, Applicant has claimed priority to the corresponding U.S. Provisional Application, Serial No. 60/035,205, filed January 10, 1997. MPEP 201.11 states that an application for patent is entitled to the benefit of the filing date of a prior provisional application if four conditions are met: (1) the later application must be an application for a patent for an invention which is also disclosed in the prior application; (2) the later application must be copending with the prior application; (3) the later application must contain a specific reference to the prior application in the specification; and (4), the later application must be filed by an inventor or inventors named in the prior application.

Applicant respectfully submit that the present application (09/004,827) is entitled to the

benefit of the filing date of the earlier provisional application (60/035,205). With regard to the first condition, the invention recited in independent claims 18, 25, 28, 44, and 45 of the present application finds proper support at pages 2-4 of Appendix A in the provisional application, thereby satisfying the same invention requirement. With regard to the second condition, the present application was filed on January 9, 1998, within 12 months of the January 10, 1997, date on which the provisional application was filed, thereby satisfying the copendency requirement. With regard to the third condition, the present application contains a specific reference to the provisional application at lines 9-12 of page 1 of the specification, thereby satisfying the reference to the prior application requirement. With regard to the fourth condition, the present application and the provisional application contain the same inventor (i.e., Lawrence Page), thereby satisfying the common inventor requirement.

In view of the foregoing, Applicant respectfully submits that the present invention is properly entitled to the benefit of the January 10, 1997, filing date of the provisional application.

As a result, the Ishikawa et al. patent is not prior art under 35 U.S.C. § 102(a). The only evidence of knowledge or use in this country is the filing date of the Ishikawa et al. patent, which is May 22, 1997 (after the January 10, 1997, effective filing date of the present application). The Ishikawa et al. patent claims a foreign priority date of May 22, 1996, based on an application filed in Japan. The publication of this Japanese application would not have occurred, however, until eighteen months after its filing date, or November 1997, which is also after the January 10, 1997, effective filing date of the present application. Therefore, Ishikawa et al. is not prior art under 35 U.S.C. § 102(a).

Not only is the Ishikawa et al. patent not prior art under 35 U.S.C. § 102(a), but it is also not prior art under the other parts of 35 U.S.C. § 102. For example, 35 U.S.C. § 102(b) is directed to activity in this country more than one year before Applicant's filing date; 35 U.S.C. §

102(c) and (d) are respectively directed to evidence of abandonment and prior foreign patenting of the invention; 35 U.S.C. § 102(e) is directed to the filing of a patent application, describing the invention, in this country before the invention by the Applicant (MPEP 2136.03 specifically states that a reference's foreign priority date under 35 U.S.C. § 119(a)-(d) cannot be used as the 35 U.S.C. § 102(e) reference date); 35 U.S.C. § 102(f) is directed to evidence of derivation; and 35 U.S.C. § 102(g) is directed to evidence of another's activity in this country before Applicant's filing date.

Because the Ishikawa et al. reference is not prior art under any part of 35 U.S.C. § 102, the Ishikawa et al. reference cannot be considered prior art under 35 U.S.C. § 103(a). The Examiner rejected claims 19-24 under 35 U.S.C. § 103(a) based at least in part on the Ishikawa et al. patent. Because Ishikawa et al. is not prior art, Applicant respectfully submits that the rejection of claims 19-24 should be withdrawn.

In rejecting the claims, the Examiner presents a number of interpretations of the Ishikawa et al. patent and asserts that certain claimed subject matter is "well known." In view of the above discussion, Applicant submits that addressing these interpretations and assertions at this time is unnecessary, but reserves the right to address them at a later time should they become relevant. Also, should the "well known" assertions become relevant, Applicant requests that the Examiner provide documentation that support the assertions.

The Examiner also rejected claims 36 and 37 under 35 U.S.C. § 103(a) as allegedly unpatentable over Applicant's allegedly admitted prior art in view of Egger et al. Applicant respectfully traverses this rejection.

Independent claim 36 recites a combination of features for ranking a plurality of linked documents. The combination includes automatically performing a random traversal of a plurality of linked documents, wherein performing a random traversal includes selecting a

random link to traverse in a current linked document; for each linked document that is traversed, assigning a rank to the linked document that is dependent on the number of times the linked document has been traversed; and processing the plurality of linked documents according to their rank.

The allegedly admitted prior art does not disclose or suggest this claimed combination. Among other things, the allegedly admitted prior art does not disclose or suggest automatically performing a random traversal of a plurality of linked documents, where the random traversal includes selecting a random link to traverse in a current linked document and, for each linked document that is traversed, assigning a rank to the linked document that is dependent on the number of times the linked document has been traversed.

In the telephone conference of February 5, 2001, the Examiner verbally agreed that the allegedly admitted prior art does not disclose or suggest "automatically performing a random traversal of a plurality of linked documents," as recited in amended claim 36. Therefore, claim 36 is patentable over the allegedly admitted prior art and Egger et al., whether taken alone or in any reasonable combination. Claim 37, which depends from claim 36, is patentable over the allegedly admitted prior art and Egger et al. for at least the reasons given with regard to claim 36.

New claims 46-55 recite various features of the present invention. These claims all depend upon independent claim 18. Applicant submits that these dependent claims are patentable over the prior art of record for at least the reasons given with regard to claim 18.

In view of the foregoing amendments and remarks, Applicant respectfully requests the Examiner's reconsideration of the application and the timely allowance of pending claims 18-25, 28, and 36-55.

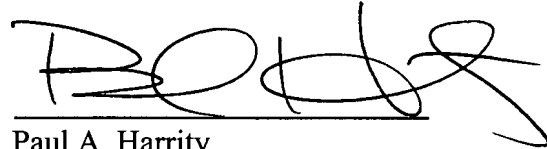
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Respectfully submitted,

HARRITY & SNYDER, L.L.P.

By: _____



Paul A. Harrity
Reg. No. 39,574

Dated: February 6, 2001

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In re Patent Application of

Lawrence PAGE

Application No.: 09/004,827

Filed: January 9, 1998

For: METHOD FOR NODE
RANKING IN A LINKED
DATABASE



Group Art Unit: 2171

Examiner: U. Le

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FEB 07 2001
Technology Center 2100

AMENDMENT/REPLY TRANSMITTAL LETTER

Commissioner of Patent and Trademarks
Washington, D.C. 20231

Sir:

Enclosed is a reply for the above-identified patent application.

- Applicant wishes to change status from Small Entity to Large Entity.
- A Petition for Extension of Time is also enclosed.
- A Terminal Disclaimer and a check for \$55.00 \$110.00 to cover the requisite Government fee are also enclosed.
- Applicant(s) request continued examination under 37 C.F.R. § 1.114 and enclose the \$355.00 \$710.00 fee due under 37 C.F.R. § 1.17(e).
- Applicant(s) previously submitted , on , for which continued examination is requested.
- A request for Entry and Consideration of Submission under 37 C.F.R. § 1.129(a) is also enclosed.

- No additional claim fee is required.
- An additional claim fee is required, and is calculated as shown below:

AMENDED CLAIMS					
	No. of Claims	Highest No. Of Claims Previously Paid For	Extra Claims	Rate	Additional Fee
Total Claims	29	Minus 37	0	x \$18.00 =	0
Ind. Claims	6	Minus 11	0	x \$ 80.00 =	0
If Amendment adds multiple dependent claims, add \$270.00					RECEIVED FEB 07 2001 Technology Center 2100
Total Amendment Fee					
If Small entity status is claimed, subtract 50% of Total Amendment Fee					
TOTAL ADDITIONAL FEE DUE FOR THIS AMENDMENT					0

- A claim fee in the amount of \$ _ is enclosed.
- Charge \$ _ to Deposit Account no. 50-1070.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1070 and please credit any excess fees to such deposit account.

The Commissioner is hereby authorized to charge any appropriate fees under 37 C.F.R. §§ 1.16, 1.17, 1.20(d) and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 50-1070.



26615

PATENT TRADEMARK OFFICE

Respectfully submitted,

HARRITY & SNYDER, L.L.P.

By:

A handwritten signature in black ink, appearing to read "PAUL A. HARRITY", written over a horizontal line.

Paul A. Harrity
Reg. No. 39,574

11240 Waples Mill Road
Suite 300
Fairfax, Virginia 22030
(571) 432-0800

Date: February 6, 2001

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

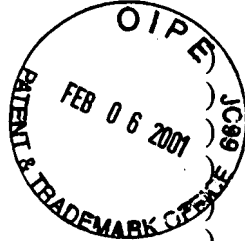
In re Patent Application of

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Technology Center 2100

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 An additional claim fee is required, and is calculated as shown below:

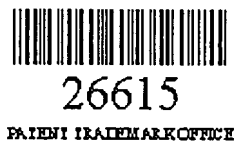
AMENDED CLAIMS					
	No. of Claims	Highest No. Of Claims Previously Paid For	Extra Claims	Rate	Additional Fee
Total Claims	29	Minus 37	0	x \$18.00 =	0
Ind. Claims	6	Minus 11	0	x \$ 80.00 =	0
If Amendment adds multiple dependent claims, add \$270.00					
Total Amendment Fee					0
If Small entity status is claimed, subtract 50% of Total Amendment Fee					
TOTAL ADDITIONAL FEE DUE FOR THIS AMENDMENT					0

- A claim fee in the amount of \$ _ is enclosed.
 Charge \$ _ to Deposit Account no. 50-1070.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1070 and please credit any excess fees to such deposit account.

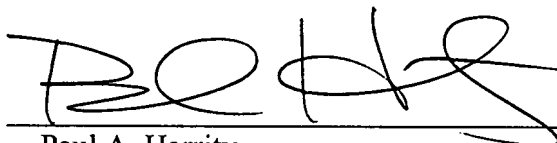
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 FEB 07 2001
 Technology Center 2100

The Commissioner is hereby authorized to charge any appropriate fees under 37 C.F.R. §§ 1.16, 1.17, 1.20(d) and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 50-1070.



Respectfully submitted,

HARRITY & SNYDER, L.L.P.

By: 
Paul A. Harrity
Reg. No. 39,574

11240 Waples Mill Road
Suite 300
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Date: February 6, 2001



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
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OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

D.J.
#24 12-15-00
Change of address

CHANGE OF ADDRESS/POWER OF ATTORNEY

FILE LOCATION 21X1 SERIAL NUMBER 09004827 PATENT NUMBER

THE CORRESPONDENCE ADDRESS HAS BEEN CHANGED TO CUSTOMER # 26615

THE PRACTITIONERS OF RECORD HAVE BEEN CHANGED TO CUSTOMER # 26615

ON 11/09/00 THE ADDRESS OF RECORD FOR CUSTOMER NUMBER 26615 IS:

HARRITY & SNYDER, LLP
11240 WAPLES MILL ROAD
SUITE 300
FAIRFAX VA 22030

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DEC 14 2000

Technology Center 2100

AND THE PRACTITIONERS OF RECORD FOR CUSTOMER NUMBER 26615 ARE:

39574 41428 42784 43367 43417

PTO INSTRUCTIONS: PLEASE TAKE THE FOLLOWING ACTION WHEN THE CORRESPONDENCE ADDRESS HAS BEEN CHANGED TO CUSTOMER NUMBER: RECORD, ON THE NEXT AVAILABLE CONTENTS LINE OF THE FILE JACKET, 'ADDRESS CHANGE TO CUSTOMER NUMBER'. LINE THROUGH THE OLD ADDRESS ON THE FILE JACKET LABEL AND ENTER ONLY THE 'CUSTOMER NUMBER' AS THE NEW ADDRESS. FILE THIS LETTER IN THE FILE JACKET. WHEN ABOVE CHANGES ARE ONLY TO FEE ADDRESS AND/OR PRACTITIONERS OF RECORD, FILE LETTER IN THE FILE JACKET. THIS FILE IS ASSIGNED TO GAU 2171.



**UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/004,827	01/09/98	PAGE	L S96-213
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026615
HARRITY & SNYDER, LLP
11240 WAPLES MILL ROAD
SUITE 300
FAIRFAX VA 22030

TM02/1205

EXAMINER

ART UNIT	PAPER NUMBER
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LEU
2171
DATE MAILED:

12/05/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/004,827

Applicant(s)

Page

Examiner
Uyen Le

Group Art Unit
2171



Responsive to communication(s) filed on Sep 20, 1900

This action is FINAL.

Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

Claim(s) 18-25, 28, and 36-45 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

Claim(s) _____ is/are allowed.

Claim(s) 18-25, 28, and 36-45 is/are rejected.

Claim(s) _____ is/are objected to.

Claims _____ are subject to restriction or election requirement.

Application Papers

See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

The drawing(s) filed on _____ is/are objected to by the Examiner.

The proposed drawing correction, filed on _____ is approved disapproved.

The specification is objected to by the Examiner.

The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

All Some* None of the CERTIFIED copies of the priority documents have been
 received.

received in Application No. (Series Code/Serial Number) _____.

received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

Notice of References Cited, PTO-892

Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

Interview Summary, PTO-413

Notice of Draftsperson's Patent Drawing Review, PTO-948

Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

1. Claims 18-25, 28, 36-45 are in this application.
2. Applicant's arguments regarding claims 18-25, 28, 36, 37 have been fully considered but they are moot in view of the new grounds of rejection presented in this Office Action.

Claim Rejections - 35 USC § 102

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. Claims 18, 25, 28, 38-45 are rejected under 35 U.S.C. 102(a) as being anticipated by Ishikawa et al (US 5,848,407).

Claim 18 merely reads on the method of Ishikawa scoring documents according to their reference relationships (see the abstract, column 2, line 65- column 3, line 8). The claimed linking document is met by the parent document. The claimed linked document is met by the hypertext document. The claimed assigning a score to each of the linked documents based on scores of the one or more linking documents is met when Ishikawa shows that the ranking of a particular hypertext document can be determined by considering the particular parent documents having the reference relationships with the particular hypertext document (see column 4, lines 26-30). The claimed processing the linked documents according to their scores is met when Ishikawa shows that documents are ranked and presented to users (see Figure 3).

Claim 25 essentially recites the same limitations of claim 18 with the exception of assigning a score to one selected linked document instead of assigning a score to each of the linked documents as recited in claim 18. The scope of claim 25 is encompassed

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by the scope of claim 18. Therefore, claim 25 is rejected for the same reasons stated in claim 18 above.

Regarding claim 28, Ishikawa discloses a computer implemented method of ranking a plurality of linked documents (see the abstract). Claim 28, lines 3-6 merely read on the well known fact that documents are referencing one another in the Web (see column 2, lines 30-32). The claimed generating an initial estimate of a rank for each of the linked documents is met when Ishikawa shows that an importance degree of each hypertext is estimated to meet a user's retrieval request and hypertext documents are ranked according to their estimated values (see column 2, lines 41-50). Ishikawa clearly teaches the concept of updating the rank of each linked document using ranks for the linking documents when Ishikawa shows that the ranking of a particular hypertext document can be determined from the parent document having the reference relationships with the particular hypertext document (see column 4, lines 26-30). The claimed processing the linked documents according to their updated ranks merely reads on the fact that the hypertext document is processed according to the importance degrees of the unified hypertext document and displayed (see Figure 3, column 4, lines 5-13).

Regarding claims 38, 39, Ishikawa clearly shows displaying the links to the linked documents as a directory listing and displaying annotations representing the score of each of the linked documents(see Figures 4, 5).

Regarding claim 40, Ishikawa clearly shows that the annotations are text (see Figure 5).

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Regarding claim 41, Ishikawa discloses textual matching (see column 3, lines 46-59).

Regarding claim 42, Ishikawa discloses matching anchor text associated with the links (see Figure 4, column 3, lines 9-19).

Regarding claim 43, Ishikawa discloses processing the linked documents based on groupings of the linked documents when Ishikawa shows that retrieval results are displayed to the user (see Figure 3).

Claim 44 corresponds to a computer program product to perform the method of claim 18, thus is rejected for the same reasons stated in claim 18 above.

Claim 45 differs from claim 44 by "searching" a plurality of documents instead of "obtaining" a plurality of documents as recited in claim 44. Ishikawa clearly shows that the user is searching a plurality of documents on the Web (see the abstract). Therefore, claim 45 is rejected for the same reasons stated in claim 44 above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 19, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa et al (US 5,848,407).

Regarding claim 19, although Ishikawa does not explicitly show a weighing factor for each of the linking document, the weighing factor being dependent on the number of

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links to the one or more linking documents and adjusting the score of each linking document based on the weighing factor, Ishikawa clearly teaches the concept of weighing factor and adjusting the score of the linking documents when Ishikawa shows that the documents have reference relationships (see column 4, lines 26-30). Therefore, it would have been obvious to one of ordinary skill in the art to include this feature in the method of Ishikawa in order to take into account the number of hypertext documents related to a parent document.

Claim 23 merely reads on the fact that it is well known in the art to assign importance degrees to a document as shown by Ishikawa (see the abstract). Therefore, it would have been obvious to one of ordinary skill in the art to include a weighing factor dependent on the importance, visibility or textual emphasis of the links in the linking document and adjusting the score of the linking document as claimed in order to take into consideration the importance of the parent document in the method of Ishikawa.

5. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa et al (US 5,848,407), in view of applicant's admitted prior art.

Regarding claim 20, although Ishikawa does not explicitly show identifying a weighing factor dependent on an estimation of a probability that a linking document will be accessed, it is well known in the art that users typically jump to a different place in the web after following a few links as admitted by applicant at page 12, line 19 of the specification. Note applicant merely models well known typical users behavior. The fact that users typically jump to a different place in the web after following a few links is not

Art Unit: 2171

applicant's invention but a mere well known users behavior. Therefore, it would have been obvious to one of ordinary skill in the art to include a weighing factor dependent on an estimation of a probability that a linking document will be accessed and adjusting the score of the linking document in the method of Ishikawa in order to take into consideration typical users' behavior of jumping while surfing the Web.

6. Claims 21, 22, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa et al (US 5,848,407), in view of Egger et al (US 5,832,494).

Claims 21, 22 merely read on the well known fact shown by Egger that a Web site is considered more important than a single document (see column 50, lines 32-34). Therefore, it would have been obvious to one of ordinary skill in the art to include the claimed features in order to take into consideration the status of the parent document while implementing the method of Ishikawa.

Regarding claim 24, although Ishikawa does not explicitly show a weighing factor for each of the linking document, the weighing factor being dependent on a particular user's preference, the rate at which users access the linking document or the importance of the linking document and adjusting the score of each linking document based on the weighing factor, it is well known in the art as shown by Egger to count the number of visits to a site, to give one type of document more importance than another type and to weigh the number of hyperlink within a page (see column 50, lines 22-41). Therefore, it would have been obvious to one of ordinary skill in the art to include the

Art Unit: 2171

claimed features as shown by Egger in the method of Ishikawa in order adjust the score of a parent document based on a desired criteria.

7. Claims 36, 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art, in view of Egger et al (US 5,832,494).

Claim 36 merely reads on the fact that users typically jumps to a different place in the web after following a few links as admitted by applicant at page 12, line 19 of the specification. Note applicant merely models well known typical users behavior. The fact that users typically jumps to a different place in the web after following a few links is not applicant's invention but a mere well known users behavior. Furthermore, Eggers clearly teaches the concept of assigning a rank to the linked document that is dependent on the number of times the linked documents has been traversed when Eggers show that the document most visited has a greater weighing factor (see column 50, lines 30-39). Therefore, it would have been obvious to one of ordinary skill in the art to include the claimed features of performing a random traversal of the linked documents, assigning a rank to the linked document dependent on the number of times the linked document has been traversed and processing the linked documents according to their rank in order to take into consideration the mostly visited linked documents in the method of prior art.

Regarding claim 37, since it is well known in the art that a user typically jumps to another site after following a few links, it would have been obvious to one of ordinary skill in the art to include a predetermined probability that the next linked document to be

Art Unit: 2171

traversed will be a random one of the plurality of linked documents in the method of the prior art in order to model different user's behaviors.

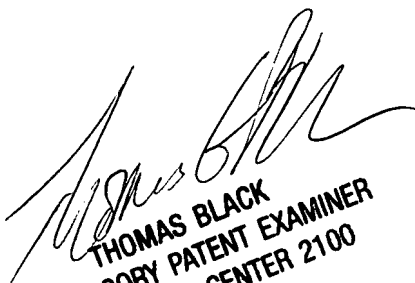
Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Uyen T Le whose telephone number is 703-305-4134. The examiner can normally be reached on M-T 7:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on 305-9707. The fax phone numbers for the organization where this application or proceeding is assigned are 308-9051 for all communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 305-9000.

UL
November 30, 2000


THOMAS BLACK
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

FORM PTO-892	U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	SERIAL NO. 09/004,827	GROUP ART UNIT 2771	ATTACHMENT TO PAPER NO. 23
NOTICE OF REFERENCES CITED		APPLICANT(S) Page		

U.S. PATENT DOCUMENTS

*	DOCUMENT NO.	DATE	NAME	CLASS	SUB-CLASS	FILING DATE
A	5,848,407	12/1998	Ishikawa et al	707	2	
B	5,832,494	11/1998	Egger et al	707	102	
C						
D						
E						
F						
G						
H						
I						
J						
K						

FOREIGN PATENT DOCUMENTS

*	DOCUMENT NO.	DATE	COUNTRY	NAME	CLASS	SUB-CLASS
L						
M						
N						
O						
P						
Q						

OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)

R	
S	
T	
U	

EXAMINER Uyen Le	DATE November 30, 2000	Form892ccs2106b
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* A copy of this reference is not being furnished with this office action.
(See Manual of Patent Examining Procedure, section 707.05(a).)



Patent Attorney's Docket No. S96-213

#22

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of)	
)	
Lawrence PAGE	)	Group Art Unit: 2771
)	
Application No.: 09/004,827)	Examiner: U. Le
)	
Filed: January 9, 1998)	
)	
For: METHOD FOR NODE RANKING IN A)	
LINKED DATABASE)	

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CHANGE OF ADDRESS REQUEST

Commissioner of Patent and Trademarks
Washington, D.C. 20231

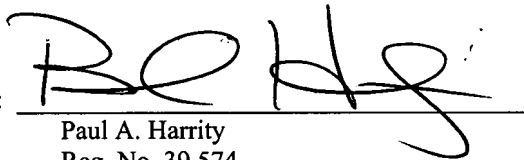
Sir:

This is to advise that the undersigned has recently moved to a new business address. Please address all future correspondence for the above-identified application to:

Harrity & Snyder, L.L.P.
11240 Waples Mill Road
Suite 300
Fairfax, Virginia 22030
Phone: (571) 432-0800
Fax: (571) 432-0808

Respectfully submitted,

HARRITY & SNYDER, L.L.P.

By: 
Paul A. Harrity
Reg. No. 39,574

11240 Waples Mill Road
Suite 300
Fairfax, Virginia 22030
(571) 432-0800

Date: November 1, 2000

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PATENT

Attorney Docket No. S96-213 (0026) ~~SEP 25~~ 2000

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE TC 2700 MAIL ROOM

In re Application of:

Lawrence PAGE

Serial No.: 09/004,827

Filed: January 9, 1998

For: METHOD FOR NODE RANKING
IN A LINKED DATABASE



Group Art Unit: 2771

Examiner: U. Le

#D/2P
SA

Commissioner for Patents
Washington, D.C. 20231

Sir:

AMENDMENT

In response to the Office Action of June 12, 2000, the period for response being extended through October 12, 2000, by the filing of a petition for a one month extension of time and the corresponding fee herewith, please amend this application as follows:

IN THE CLAIMS:

Please cancel claims 1-7, 9-15, 26, 27, and 29-33 without prejudice or disclaimer.

Please amend claims 18-25 and 28 as follows:

18. (Twice amended) A computer implemented method of [ranking] scoring a plurality of linked documents, comprising:

obtaining a plurality of [linked] documents, at least some of the documents being linked documents, at least some of the documents being linking documents, and at least some of the documents being both linked documents and linking documents, each of the linked documents

D
Cost

being pointed to by a link in one or more of the linking documents;

[for each linked document pointed to by a link in one or more of the plurality of linked documents,] assigning a [rank] score to each of the linked [document that is dependent] documents based on [ranks] scores of the one or more [of the plurality of linked] linking documents[, wherein each of the ranks of the one or more of the plurality of linked documents are adjusted by a weight]; and

D1
could

processing the [plurality of] linked documents according to their [rank] scores.

²19. (Amended) The method of claim ¹18, wherein the assigning includes:
identifying a weighting factor for each of the linking documents, the [weight is] weighting factor being dependent on the number of links [in] to the one or more [of the plurality of linked] linking documents, and
adjusting the score of each of the one or more linking documents based on the identified weighting factor.

D2
cont

³20. (Amended) The method of claim ¹18, wherein the assigning includes:
identifying a weighting factor for each of the linking documents, the [weight is] weighting factor being dependent on an estimation of a probability that a [linked] linking document will be accessed, and
adjusting the score of each of the one or more linking documents based on the identified weighting factor.

⁴21. (Amended) The method of claim ¹18, wherein the assigning includes:

22

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identifying a weighting factor for each of the linking documents, the [weight is] weighting factor being dependent on the URL, host, domain, author, institution, or last update time of the one or more [plurality of linked] linking documents, and
adjusting the score of each of the one or more linking documents based on the identified weighting factor.

D2
Cont

⁵
22. (Amended) The method of claim ~~18~~¹, wherein the assigning includes:
identifying a weighting factor for each of the linking documents, the [weight is] weighting factor being dependent on whether the one or more [plurality of linked] linking documents are selected documents or roots, and
adjusting the score of each of the one or more linking documents based on the identified weighting factor.

⁶
23. (Amended) The method of claim ~~18~~¹, wherein the assigning includes:
identifying a weighting factor for each of the linking documents, the [weight is] weighting factor being dependent on the importance, visibility or textual emphasis of the links in the [plurality of linked] one or more linking documents, and
adjusting the score of each of the one or more linking documents based on the identified weighting factor.

⁷
24. (Amended) The method of claim ~~18~~¹, wherein the assigning includes:
identifying a weighting factor for each of the linking documents, the [weight is] weighting factor being dependent on a particular user's preferences, the rate at which

users access the one or more [plurality of linked] linking documents, or the importance of the one or more [plurality of linked] linking documents, and

adjusting the score of each of the one or more linking documents based on the identified weighting factor.

D2
Cont

~~8~~
25. (Twice amended) A computer implemented method of [ranking] determining a score for a plurality of linked documents, comprising:

obtaining a plurality of linked documents;

selecting one of the linked documents;

[for each linked document pointed to by a link in one or more of the plurality of linked documents,] assigning a [rank to] score to the [linked] selected document that is dependent on [ranks] scores of [the one or more of the plurality of linked] documents that link to the selected document; and

processing the [plurality of] linked documents according to their [rank] scores[, wherein the processing includes displaying links to the plurality of linked documents as results from a search].

D3

~~9~~
28. (Twice amended) A computer implemented method of ranking a plurality of linked documents, comprising:

obtaining a plurality of [linked] documents, at least some of the documents being linked documents and at least some of the documents being linking documents, at least some of the linking documents also being linked documents, each of the linked documents being pointed to by a link in one or more of the linking documents;

D4
Cont

generating an initial estimate of [the] a rank [of] for each of the [one or more plurality of] linked documents;

updating the estimate of the rank for each of the [one or more plurality of] linked documents [utilizing estimates of] using ranks for [linked] the one or more linking documents [that include a link to the linked document;

for each linked document pointed to by a link in one or more of the plurality of linked documents, assigning a rank to the linked document that is dependent on ranks of the one or more of the plurality of linked documents]; and

processing the [plurality of] linked documents according to their updated ranks [rank].

Please add new claims 38-45.

-- ~~38~~¹ The method of claim ~~18~~¹, wherein the processing includes:
displaying links to the linked documents as a directory listing.

D5
cont

~~39~~¹³ The method of claim ~~18~~¹, wherein the processing includes:
displaying links to the linked documents, and
displaying annotations representing the score of each of the linked documents.

~~40~~¹⁴ The method of claim ~~39~~¹³, wherein the annotations are bars, icons, or text.

~~41~~¹⁵ The method of claim ~~18~~¹, further comprising:
processing the linked documents based on textual matching.

D

~~42.~~¹⁶

The method of claim ~~41~~¹⁵, wherein the textual matching includes matching anchor text associated with the links.

~~43.~~¹⁷

The method of claim ~~18~~¹, further comprising:
processing the linked documents based on groupings of the linked documents.

~~44.~~¹⁸

A computer-readable medium that stores instructions executable by one or more processing devices to perform a method for determining scores for a plurality of linked documents, comprising:

instructions for obtaining a plurality of documents, at least some of the documents being linked documents, at least some of the documents being linking documents, and at least some of the documents being both linked documents and linking documents, each of the linked documents being pointed to by a link in one or more of the linking documents;

instructions for determining a score for each of the linked documents based on scores for the one or more linking documents; and

instructions for processing the linked documents according to their scores.

~~45.~~¹⁹

A computer-readable medium that stores instructions executable by one or more processors to perform a method for scoring documents, comprising:

instructions for searching a plurality of documents, at least some of the documents being linked documents and at least some of the documents being linking documents, at least some of the linking documents also being linked documents, each of the linked documents being pointed to by a link in one or more of the linking documents;

instructions for scoring each of the linked documents based on scores for the one or more linking documents; and

instructions for providing the linked documents based on their scores.--

DS
coll.

REMARKS

Applicant would like to thank Examiner Le and Primary Examiner Amsbury for the courtesies extended during the personal interviews that took place on August 22, 2000, and September 20, 2000. In the former interview, Applicant's representatives agreed to amend the claims for clarification purposes. Applicant submits that the clarification presented herein is adequately supported by the specification. In the latter interview, the Examiners seemingly agree that the claims overcome the prior art rejection of record.

In the Office Action, the Examiner objected to claims 1 and 9 due to minor informalities; rejected claims 18, 19, 26, and 36 under 35 U.S.C. § 102(a) as anticipated by Applicant's admission of prior art; rejected claim 28 under 35 U.S.C. § 102(e) as anticipated by Barrett et al. (U.S. Patent No. 5,727,129); rejected claims 25, 27, and 29-33 under 35 U.S.C. § 102(e) as anticipated by Oren et al. (U.S. Patent No. 5,630,117); rejected claims 20, 21, and 23 under 35 U.S.C. § 103(a) as unpatentable over Applicant's admission of prior art; and rejected claims 22, 24, and 37 under 35 U.S.C. § 103(a) as unpatentable over Applicant's admission of prior art in view of Barrett et al. The Examiner allowed claims 1-7 and 9-15.

By this Amendment, Applicant has canceled claims 1-7, 9-15, 26, 27, and 29-33, amended claims 18-25 and 28 to more clearly define the invention, and added new claims 38-45. Applicant respectfully traverses the Examiner's rejections under 35 U.S.C. §§ 102 and 103.

Applicant appreciates the Examiner's indication of allowable subject matter in claims 1-7

and 9-15, but Applicant nevertheless cancels these claims without prejudice or disclaimer. Therefore, the Examiner's objection to claims 1 and 9 and the identification of minor informalities in claims 1-7 and 9-15 during the personal interview are moot. Applicant reserves the right to pursue these claims in a continuation application.

The Examiner rejected pending claims 18, 19, and 36 under 35 U.S.C. § 102(a) as allegedly anticipated by Applicant's admission of prior art. The Examiner alleged that the admitted prior art at pages 3 and 12 of Applicant's specification discloses the invention as claimed. Applicant respectfully disagrees. The admitted prior art at page 3 discloses a Hyperlink Search Engine that determines document relevance by using a variation of keyword matching. In particular, search query terms are compared to a collection of anchor text descriptions that point to the document, and a rank is assigned to the document based on the degree to which the search terms match the anchor descriptions in its backlink documents.

By contrast, the present invention recited in amended independent claim 18, for example, includes a combination of steps for scoring a plurality of linked documents. The combination includes obtaining a plurality of documents, at least some of the documents being linked documents, at least some of the documents being linking documents, and at least some of the documents being both linked documents and linking documents, each of the linked documents being pointed to by a link in one or more of the linking documents; assigning a score to each of the linked documents based on scores of the one or more linking documents; and processing the linked documents according to their scores.

The admitted prior art does not disclose or suggest this claimed combination. Among other things, the admitted prior art does not disclose or suggest assigning a score to each of the linked documents based on the scores of the one or more linking documents. Instead, the

admitted prior art discloses assigning a rank to a document based on a degree to which search terms match the anchor descriptions in its backlink documents (page 3, lines 16-18). In other words, the rank (or score) of a document in the admitted prior art is not based on the rank (or score) of its backlink documents, but on a degree to which a user's search term query matches the anchor descriptions in the backlink documents.

For at least these reasons, Applicant submits that independent claim 18 is not anticipated by the admitted prior art.

Amended dependent claim 19 recites that the assigning step of claim 18 includes identifying a weighting factor for each of the linking documents, where the weighting factor is dependent on the number of links to the one or more linking documents, and adjusting the score of each of the one or more linking documents based on the identified weighting factor. The admitted prior art does not disclose or suggest the claimed combination of identifying a weighting factor for the linking documents that depends on the number of links to the linking documents, adjusting the score of the linking documents based on the identified weighting factor, and assigning a score to the linked documents based on the scores of the linking documents.

For at least these reasons and the reasons given with regard to claim 18, Applicant submits that dependent claim 19 is not anticipated by the admitted prior art.

Independent claim 36 recites a combination of steps for ranking a plurality of linked documents. The combination includes performing a random traversal of a plurality of linked documents, wherein performing a random traversal includes selecting a random link to traverse in a current linked document; for each linked document that is traversed, assigning a rank to the linked document that is dependent on the number of times the linked document has been

traversed; and processing the plurality of linked documents according to their rank.

The admitted prior art does not disclose or suggest this claimed combination. Among other things, the admitted prior art does not disclose or suggest performing a random traversal of a plurality of linked documents, where the random traversal includes selecting a random link to traverse in a current linked document and, for each linked document that is traversed, assigning a rank to the linked document that is dependent on the number of times the linked document has been traversed.

The Examiner alleged that the citation counting method described in Applicant's specification at page 3, lines 20-22, discloses assigning a rank to a linked document based on the number of times the linked document has been traversed. Applicant respectfully disagrees. At the cited section, Applicant discloses that the citation counting method determines "the importance of a document by counting its number of citations, or backlinks." Counting the number of citations for a document, however, is not the same as determining the number of times that document will be traversed. Therefore, this section of Applicant's specification in no way discloses or implies that a linked document is ranked based on the number of times that the linked document has been traversed by a random traversal, as recited in claim 36.

The Examiner also alleges that the admitted prior art discloses performing a random traversal at page 12, line 19. Applicant respectfully disagrees. At page 12, lines 16-20, of Applicant's specification, Applicant discloses that "[t]he $(1-\alpha)$ factor acts as a damping factor that limits the extent to which a document's rank can be inherited by children documents. This models the fact that users typically jump to a different place in the web after following a few links." Applicant notes that the portion of the specification cited by the Examiner does not appear in the Background of the Invention section, but rather describes Applicant's preferred

embodiment. Furthermore, the mere notion that a user may completely leave a web page (rather than follow one of its links) in no way discloses or implies a computer implemented method that performs a random traversal that follows links from one page to another, as recited in claim 36.

Accordingly, Applicant submits that independent claim 36 is not anticipated by the admitted prior art.

In view of the foregoing, Applicant respectfully requests the reconsideration and withdrawal of the rejection of pending claims 18, 19, and 36.

The Examiner rejected pending claim 28 under 35 U.S.C. § 102(e) as allegedly anticipated by Barrett et al. The Examiner alleged that Barrett et al. discloses the invention as claimed. Applicant respectfully disagrees. Barrett et al. discloses a system that maintains information regarding remote sites accessed by a user and pre-downloads information that the user is predicted to likely want to access (Abstract).

By contrast, the invention recited in amended claim 28 includes a combination of steps for ranking a plurality of linked documents. The combination includes obtaining a plurality of documents, at least some of the documents being linked documents and at least some of the documents being linking documents, at least some of the linking documents also being linked documents, each of the linked documents being pointed to by a link in one or more of the linking documents; generating an initial estimate of a rank for each of the linked documents; updating the estimate of the rank for each of the linked documents using ranks for the one or more linking documents; and processing the linked documents according to their updated ranks.

Barrett et al. fails to disclose or suggest this claimed combination. Among other things, Barrett et al. fails to disclose or suggest updating an estimate of the rank for each of the linked documents using ranks for the one or more linking documents. Instead, Barrett et al. discloses

predicting web pages that a user may visit based on the current web page and information regarding previous visits to the current web page (col. 7, line 34 - col. 8, line 26). Barrett et al. does not, however, disclose determining (i.e., updating an estimate of) a rank of a linked document based on the ranks for one or more linking documents, as recited in claim 28.

For at least these reasons, Applicant submits that independent claim 28 is not anticipated by Barrett et al. Applicant, therefore, respectfully requests the reconsideration and withdrawal of the rejection of claim 28.

The Examiner rejected pending claim 25 under 35 U.S.C. § 102(e) as allegedly anticipated by Oren et al. The Examiner alleged that Oren et al. discloses the invention as claimed. Applicant respectfully disagrees. Oren et al. discloses a system that ranks documents in a linked database based on the documents' relevancy to a selected option (col. 8, lines 14-19).

By contrast, the present invention recited in amended independent claim 25, for example, recites a combination of steps for determining a score for a plurality of linked documents. The combination includes obtaining a plurality of linked documents; selecting one of the linked documents; assigning a score to the selected document that is dependent on scores of documents that link to the selected document; and processing the linked documents according to their scores.

Oren et al. fails to disclose or suggest this claimed combination. Among other things, Oren et al. fails to disclose or suggest assigning a score to a document, selected from a plurality of linked documents, that is dependent on scores of documents that link to the selected document. Instead, Oren et al. discloses determining a rank of a linked document based on its relevancy to a selected option (i.e., a set of index terms) (col. 7, lines 8-10; col. 8, lines 14-19).

For at least these reasons, Applicant submits that independent claim 25 is not anticipated

by Oren et al. Applicant, therefore, requests the reconsideration and withdrawal of the rejection of pending claim 25.

The Examiner rejected claims 20, 21, and 23 under 35 U.S.C. § 103(a) as allegedly unpatentable over Applicant's admission of prior art. Amended dependent claims 20, 21, and 23 recite that the assigning step of claim 18 includes identifying a weighting factor for each of the linking documents, where the weighting factor is dependent on criteria that differs in the different claims, and adjusting the score of each of the one or more linking documents based on the identified weighting factor. The admitted prior art does not disclose or suggest identifying a weighting factor or adjusting a score based on the identified weighting factor.

For at least these reasons and the reasons given with regard to claim 18, Applicant submits that dependent claims 20, 21, and 23 are patentable over the admitted prior art. Applicant, therefore, respectfully requests the reconsideration and withdrawal of the rejection of claims 20, 21, and 23.

The Examiner rejected claims 22, 24, and 37 under 35 U.S.C. § 103(a) as allegedly unpatentable over a combination of Applicant's admission of prior art and Barrett et al. The Examiner alleged that the combination discloses the invention substantially as claimed. Applicant respectfully disagrees.

Amended dependent claims 22 and 24 recite that the assigning step of claim 18 includes identifying a weighting factor for each of the linking documents, where the weighting factor is dependent on criteria that differs in the different claims, and adjusting the score of each of the one or more linking documents based on the identified weighting factor. As described above, the admitted prior art does not disclose or suggest identifying a weighting factor or adjusting a score based on the identified weighting factor. The disclosure of Barrett et al. provides nothing

to cure the deficiencies in the disclosure of the admitted prior art. Accordingly, Applicant submits that dependent claims 22 and 24 are patentable over the admitted prior art and Barrett et al., whether taken alone or in any reasonable combination, for at least the foregoing reasons and the reasons given with regard to independent claim 18.

With regard to dependent claim 37, Applicant submits that the disclosure of Barrett et al. provides nothing to cure the deficiencies in the disclosure of the admitted prior art described above with regard to claim 36. Accordingly, Applicant submits that dependent claim 37 is patentable over the admitted prior art and Barrett et al., whether taken alone or in any reasonable combination, for at least the reasons given with regard to independent claim 36.

In view of the foregoing, Applicant respectfully requests the reconsideration and withdrawal of the rejections of claims 22, 24, and 37.

New claims 38-43 are dependent claims that ultimately depend upon independent claim 18. Applicant submits that these dependent claims are patentable over the prior art of record for at least the reasons given with regard to claim 18. New claims 44 and 45 are independent claims that recite features similar to independent claim 18. Applicant submits that these claims are, therefore, patentable over the prior art of record for the reasons given above with regard to independent claim 18.

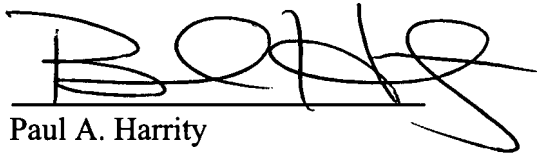
In view of the foregoing amendments and remarks, Applicant respectfully requests the Examiner's reconsideration of the application and the timely allowance of pending claims 18-25, 28, and 36-45.

To the extent necessary, a petition for an extension of time under 35 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper,

including extension of time fees, to Deposit Account No. 50-1070 and please credit any excess fees to such deposit account.

Respectfully submitted,

HARRITY & SNYDER, L.L.P.

By: 
Paul A. Harrity
Reg. No. 39,574

Dated: September 20, 2000

3900 NORTH FAIRFAX DRIVE
SUITE 300
ARLINGTON, VIRGINIA 22203
TELEPHONE: 703-525-7188
FACSIMILE: 703-525-7199

2776#

Patent
Attorney's Docket No. S96-213 (0026-0003)

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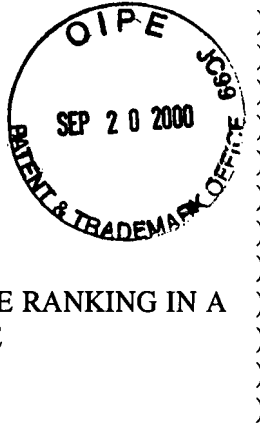
In re Patent Application of

Lawrence PAGE

Application No.: 09/004,827

Filed: January 9, 1998

For: METHOD FOR NODE RANKING IN A
LINKED DATABASE



Group Art Unit: 2771

Examiner: U. Le

TC 2700 MAIL ROOM

AMENDMENT/REPLY TRANSMITTAL LETTER

Commissioner for Patents
Washington, D.C. 20231

Sir:

Enclosed is a reply for the above-identified patent application.

- A Petition for Extension of Time is also enclosed.
- A Terminal Disclaimer and a check for [] \$55.00 (248) [] \$110.00 (148) to cover the requisite Government fee are also enclosed.
- Applicant(s) request continued examination under 37 C.F.R. § 1.114 and enclose the
[] \$345.00 (201) [] \$690.00 (101) fee due under 37 C.F.R. § 1.17(e).
- Applicant(s) previously submitted ___, on ___, for which continued examination is requested.
- A Request for Entry and Consideration of Submission under 37 C.F.R. § 1.129(a) (146/246) is also enclosed.
- No additional claim fee is required.

An additional claim fee is required, and is calculated as shown below:

AMENDED CLAIMS					
	NO. OF CLAIMS	HIGHEST NO. OF CLAIMS PREVIOUSLY PAID FOR	EXTRA CLAIMS	RATE	ADDT'L FEE
Total Claims		MINUS 20 =	0	× \$18.00 (103) =	0
Independent Claims		MINUS 3 =	0	× \$78.00 (102) =	
If Amendment adds multiple dependent claims, add \$260.00 (104)					
Total Amendment Fee					0
If small entity status is claimed, subtract 50% of Total Amendment Fee					
TOTAL ADDITIONAL FEE DUE FOR THIS AMENDMENT					0

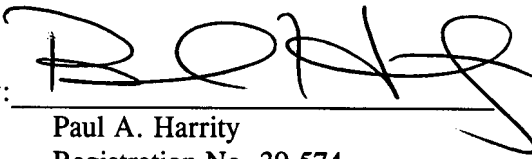
A claim fee in the amount of \$ _____ is enclosed.

Charge \$ _____ to Deposit Account No. 50-1070.

To the extent necessary, a petition for an extension of time under 37 CFR 1.136 is hereby made. Please change any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1070 and please credit any excess fees to such deposit account.

The Commissioner is hereby authorized to charge any appropriate fees under 37 C.F.R. §§ 1.16, 1.17, 1.20(d) and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 50-1070. This paper is submitted in duplicate.

Respectfully submitted,

By: 
 Paul A. Harrity
 Registration No. 39,574

3900 North Fairfax Drive
 Suite 300
 Arlington, Virginia 22203
 (703) 525-7188

Date: SEPTEMBER 26, 2000

Interview Summary

Application No.
09/004,827

Applicant(s)

PAGE

Examiner
Wayne Amsbury

Group Art Unit
2771

All participants (applicant, applicant's representative, PTO personnel):

(1) Wayne Amsbury (3) Paul Harrity
(2) Uyen Le (4) _____

Date of Interview Sep 20, 2000

Type: Telephonic Personal (copy is given to applicant applicant's representative).

Exhibit shown or demonstration conducted: Yes No. If yes, brief description:

Agreement was reached. was not reached.

Claim(s) discussed: 18-25 and 28

Identification of prior art discussed:

Admitted prior art, Cohen, Barrett, Oren et al

Description of the general nature of what was agreed to if an agreement was reached, or any other comments:


One basic issue is the iterative nature of the determination of ranks. A draft proposal will be formalized to address this issue, The proposed amendment appears to overcome the rejection of record.

(A fuller description, if necessary, and a copy of the amendments, if available, which the examiner agreed would render the claims allowable must be attached. Also, where no copy of the amendments which would render the claims allowable is available, a summary thereof must be attached.)

1. It is not necessary for applicant to provide a separate record of the substance of the interview.

Unless the paragraph above has been checked to indicate to the contrary, A FORMAL WRITTEN RESPONSE TO THE LAST OFFICE ACTION IS NOT WAIVED AND MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a response to the last Office action has already been filed, APPLICANT IS GIVEN ONE MONTH FROM THIS INTERVIEW DATE TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW.

2. Since the Examiner's interview summary above (including any attachments) reflects a complete response to each of the objections, rejections and requirements that may be present in the last Office action, and since the claims are now allowable, this completed form is considered to fulfill the response requirements of the last Office action. Applicant is not relieved from providing a separate record of the interview unless box 1 above is also checked.


WAYNE AMSBURY
PRIMARY EXAMINER
ART UNIT 2771

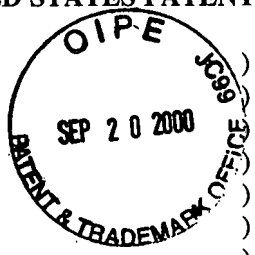
Examiner Note: You must sign and stamp this form unless it is an attachment to a signed Office action.

#20
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Patent
SEP 25 2000

Attorney's Docket No. 0026-0083

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
FC 2700 MAIL ROOM



In re Patent Application of

Lawrence PAGE

Application No.: 09/004,827

Filed: January 9, 1998

For: METHOD FOR NODE RANKING IN A
LINKED DATABASE

Group Art Unit: 2771

Examiner: U. Le

PETITION FOR EXTENSION OF TIME

Commissioner for Patents
Washington, D.C. 20231

Sir:

The following extension of time is requested to respond to the Official Action dated June 12, 2000:

one month to October 12, 2000; the extension fee is:

- \$55.00 (215) \$110.00 (115).
- The shortened statutory period has been reset by an Advisory Action dated _____.
- An extension fee in the amount of \$_____ is enclosed.
- Charge \$_____ to Deposit Account No. 50-1070.

The Commissioner is hereby authorized to charge any appropriate fees under 37 C.F.R. §§1.16, 1.17 and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 50-1070. This paper is submitted in duplicate.

Respectfully submitted,
Harrity & Snyder, L.L.P.

By:
Paul A. Harrity
Registration No. 39,574

3900 North Fairfax Drive
Suite 300
Arlington, Virginia 22203
(703) 525-7188

09/21/2000 VYANS1 00000017 09004827
01 FC:115 110.00 OP

Date: September 20, 2000

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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TC 2700 MAIL ROOM

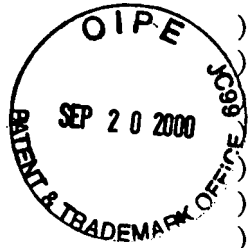
In re Patent Application of

Lawrence PAGE

Application No.: 09/004,827

Filed: January 9, 1998

For: METHOD FOR NODE RANKING IN A
LINKED DATABASE



Group Art Unit: 2771

Examiner: U. Le

AMENDMENT/REPLY TRANSMITTAL LETTER

Commissioner for Patents
Washington, D.C. 20231

Sir:

Enclosed is a reply for the above-identified patent application.

- A Petition for Extension of Time is also enclosed.
- A Terminal Disclaimer and a check for \$55.00 (248) \$110.00 (148) to cover the requisite Government fee are also enclosed.
- Applicant(s) request continued examination under 37 C.F.R. § 1.114 and enclose the
 - \$345.00 (201) \$690.00 (101) fee due under 37 C.F.R. § 1.17(e).
 - Applicant(s) previously submitted ___, on ___, for which continued examination is requested.
- A Request for Entry and Consideration of Submission under 37 C.F.R. § 1.129(a) (146/246) is also enclosed.
- No additional claim fee is required.

An additional claim fee is required, and is calculated as shown below:

AMENDED CLAIMS					
	NO. OF CLAIMS	HIGHEST NO. OF CLAIMS PREVIOUSLY PAID FOR	EXTRA CLAIMS	RATE	ADDT'L FEE
Total Claims		MINUS 20 =	0	× \$18.00 (103) =	0
Independent Claims		MINUS 3 =	0	× \$78.00 (102) =	
If Amendment adds multiple dependent claims, add \$260.00 (104)					
Total Amendment Fee					0
If small entity status is claimed, subtract 50% of Total Amendment Fee					
TOTAL ADDITIONAL FEE DUE FOR THIS AMENDMENT					0

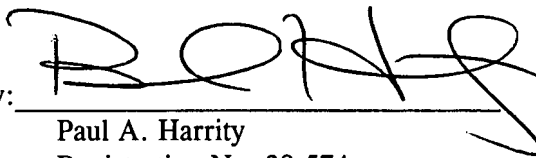
A claim fee in the amount of \$ _____ is enclosed.

Charge \$ _____ to Deposit Account No. 50-1070.

To the extent necessary, a petition for an extension of time under 37 CFR 1.136 is hereby made. Please change any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1070 and please credit any excess fees to such deposit account.

The Commissioner is hereby authorized to charge any appropriate fees under 37 C.F.R. §§ 1.16, 1.17, 1.20(d) and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 50-1070. This paper is submitted in duplicate.

Respectfully submitted,

By: 
 Paul A. Harrity
 Registration No. 39,574

3900 North Fairfax Drive
 Suite 300
 Arlington, Virginia 22203
 (703) 525-7188

Date: *SEPTEMBER 26, 2000*

#16



UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS
UNITED STATES PATENT AND TRADEMARK OFFICE
WASHINGTON, D.C. 20231
www.uspto.gov

APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
09/004,827	01/09/1998	LAWRENCE PAGE	S96-213

HARRITY & SNYDER, L.L.P
3900 NORTH FAIRFAX DRIVE
SUITE 3900
ARLINGTON, VA 22203



Date Mailed: 09/14/2000

NOTICE REGARDING POWER OF ATTORNEY

This is in response to the Power of Attorney filed 08/18/2000.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Customer Service Center *2700*
Initial Patent Examination Division (703) 308-*7827* ~~4202~~

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APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
09/004,827	01/09/1998	LAWRENCE PAGE	S96-213

21912
 RITTER VAN PELT & YI, L.L.P.
 4906 EL CAMINO REAL
 SUITE 205
 LOS ALTOS, CA 94022



Date Mailed: 09/14/2000

NOTICE REGARDING POWER OF ATTORNEY

This is in response to the Power of Attorney filed 08/18/2000.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Kenneth W. Spears

Customer Service Center 270
 Initial Patent Examination Division (703) 308-~~1202~~ 2827

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DRAFT

PATENT
Attorney Docket No. S96-213 (0026-0003)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)	
)	
Lawrence PAGE)	
)	
Serial No.: 09/004,827	)	Group Art Unit: 2771
)	
Filed: January 9, 1998	)	Examiner: U. Le
)	
For: METHOD FOR NODE RANKING)	
IN A LINKED DATABASE)	

Commissioner for Patents
Washington, D.C. 20231

Sir:

AMENDMENT

In response to the Office Action of June 12, 2000, please amend this application as follows:

IN THE CLAIMS:

Please cancel claims 1-7, 9-15, 26, 27, and 29-33 without prejudice or disclaimer.

Please amend claims 18-25 and 28 as follows:

18. (Twice amended) A computer implemented method of [ranking] scoring a plurality of linked documents, comprising:

obtaining a plurality of [linked] documents, at least some of the documents being linked documents and at least some of the documents being linking documents, each of the linked documents being pointed to by a link in one or more of the linking documents;

[for each linked document pointed to by a link in one or more of the plurality of linked documents,] assigning a [rank] score to each of the linked [document that is dependent]

DRAFT

U.S. Patent Application Serial No. 09/004,827

documents based on [ranks] scores of the one or more [of the plurality of linked] linking documents, wherein each of the ranks of the one or more of the plurality of linked documents are adjusted by a weight]; and

processing the [plurality of] linked documents according to their [rank] scores.

19. (Amended) The method of claim 18, wherein the assigning includes:
identifying a weighting factor for each of the linking documents, the [weight is] weighting factor being dependent on the number of links [in] to the one or more [of the plurality of linked] linking documents, and
adjusting the score of each of the one or more linking documents based on the identified weighting factor.

20. (Amended) The method of claim 18, wherein the assigning includes:
identifying a weighting factor for each of the linking documents, the [weight is] weighting factor being dependent on an estimation of a probability that a [linked] linking document will be accessed, and
adjusting the score of each of the one or more linking documents based on the identified weighting factor.

21. (Amended) The method of claim 18, wherein the assigning includes:
identifying a weighting factor for each of the linking documents, the [weight is] weighting factor being dependent on the URL, host, domain, author, institution, or last

DRAFT

U.S. Patent Application Serial No. 09/004,827

update time of the one or more [plurality of linked] linking documents, and
adjusting the score of each of the one or more linking documents based on the
identified weighting factor.

22. (Amended) The method of claim 18, wherein the assigning includes:
identifying a weighting factor for each of the linking documents, the [weight is]
weighting factor being dependent on whether the one or more [plurality of linked] linking
documents are selected documents or roots, and
adjusting the score of each of the one or more linking documents based on the
identified weighting factor.

23. (Amended) The method of claim 18, wherein the assigning includes:
identifying a weighting factor for each of the linking documents, the [weight is]
weighting factor being dependent on the importance, visibility or textual emphasis of the
links in the [plurality of linked] one or more linking documents, and
adjusting the score of each of the one or more linking documents based on the
identified weighting factor.

24. (Amended) The method of claim 18, wherein the assigning includes:
identifying a weighting factor for each of the linking documents, the [weight is]
weighting factor being dependent on a particular user's preferences, the rate at which
users access the one or more [plurality of linked] linking documents, or the importance of

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the one or more [plurality of linked] linking documents, and
adjusting the score of each of the one or more linking documents based on the
identified weighting factor.

25. (Twice amended) A computer implemented method of [ranking] determining a
score for a plurality of linked documents, comprising:

obtaining a plurality of linked documents;

selecting one of the linked documents;

[for each linked document pointed to by a link in one or more of the plurality of linked
documents,] assigning a [rank to] score to the [linked] selected document that is dependent on
[ranks] scores of [the one or more of the plurality of linked] documents that link to the selected
document; and

processing the [plurality of] linked documents according to their [rank] scores[, wherein
the processing includes displaying links to the plurality of linked documents as results from a
search].

28. (Twice amended) A computer implemented method of ranking a plurality of
linked documents, comprising:

obtaining a plurality of [linked] documents, at least some of the documents being linked
documents and at least some of the documents being linking documents, each of the linked
documents being pointed to by a link in one or more of the linking documents;

generating an initial estimate of [the] a rank [of] for each of the [one or more plurality of]

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linked documents;

updating the estimate of the rank for each of the [one or more plurality of] linked documents [utilizing estimates of] using ranks for [linked] the one or more linking documents [that include a link to the linked document;

for each linked document pointed to by a link in one or more of the plurality of linked documents, assigning a rank to the linked document that is dependent on ranks of the one or more of the plurality of linked documents]; and

processing the [plurality of] linked documents according to their updated ranks [rank].

Please add new claims 38-45.

- 38. The method of claim 18, wherein the processing includes:
displaying links to the linked documents as a directory listing.
39. The method of claim 18, wherein the processing includes:
displaying links to the linked documents, and
displaying annotations representing the score of each of the linked documents.
40. The method of claim 39, wherein the annotations are bars, icons, or text.
41. The method of claim 18, further comprising:
processing the linked documents based on textual matching.

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42. The method of claim 41, wherein the textual matching includes matching anchor text associated with the links.

43. The method of claim 18, further comprising:
processing the linked documents based on groupings of the linked documents.

44. A computer-readable medium that stores instructions executable by one or more processing devices to perform a method for determining scores for a plurality of linked documents, comprising:

instructions for obtaining a plurality of documents, at least some of the documents being linked documents and at least some of the documents being linking documents, each of the linked documents being pointed to by a link in one or more of the linking documents;

instructions for determining a score for each of the linked documents based on scores for the one or more linking documents; and

instructions for processing the linked documents according to their scores.

45. A computer-readable medium that stores instructions executable by one or more processors to perform a method for scoring documents, comprising:

instructions for searching a plurality of documents, at least some of the documents being linked documents and at least some of the documents being linking documents, each of the linked documents being pointed to by a link in one or more of the linking documents;

instructions for scoring each of the linked documents based on scores for the one or more

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linking documents; and

instructions for providing the linked documents based on their scores.--

REMARKS

Applicant would like to thank the Examiner for the courtesies extended during the personal interview that took place on August 22, 2000. In the interview, Applicant's representatives agreed to amend the claims for clarification purposes. Applicant submits that the clarification presented below is adequately supported by the specification.

In the Office Action, the Examiner objected to claims 1 and 9 due to minor informalities; rejected claims 18, 19, 26, and 36 under 35 U.S.C. § 102(a) as anticipated by Applicant's admission of prior art; rejected claim 28 under 35 U.S.C. § 102(e) as anticipated by Barrett et al. (U.S. Patent No. 5,727,129); rejected claims 25, 27, and 29-33 under 35 U.S.C. § 102(e) as anticipated by Oren et al. (U.S. Patent No. 5,630,117); rejected claims 20, 21, and 23 under 35 U.S.C. § 103(a) as unpatentable over Applicant's admission of prior art; and rejected claims 22, 24, and 37 under 35 U.S.C. § 103(a) as unpatentable over Applicant's admission of prior art in view of Barrett et al. The Examiner allowed claims 1-7 and 9-15.

By this Amendment, Applicant has canceled claims 1-7, 9-15, 26, 27, and 29-33, amended claims 18-25 and 28 to more clearly define the invention, and added new claims 38-45. Applicant respectfully traverses the Examiner's rejections under 35 U.S.C. §§ 102 and 103.

Applicant appreciates the Examiner's indication of allowable subject matter in claims 1-7 and 9-15, but Applicant nevertheless cancels these claims without prejudice or disclaimer. Therefore, the Examiner's objection to claims 1 and 9 and the identification of minor

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informalities in claims 1-7 and 9-15 during the personal interview are moot. Applicant reserves the right to pursue these claims in a continuation application.

The Examiner rejected pending claims 18, 19, and 36 under 35 U.S.C. § 102(a) as allegedly anticipated by Applicant's admission of prior art. The Examiner alleged that the admitted prior art at pages 3 and 12 of Applicant's specification discloses the invention as claimed. Applicant respectfully disagrees. The admitted prior art at page 3 discloses a Hyperlink Search Engine that determines document relevance by using a variation of keyword matching. In particular, search query terms are compared to a collection of anchor text descriptions that point to the document, and a rank is assigned to the document based on the degree to which the search terms match the anchor descriptions in its backlink documents.

By contrast, the present invention recited in amended independent claim 18, for example, includes a combination of steps for scoring a plurality of linked documents. The combination includes obtaining a plurality of documents, at least some of the documents being linked documents and at least some of the documents being linking documents, each of the linked documents being pointed to by a link in one or more of the linking documents; assigning a score to each of the linked documents based on scores of the one or more linking documents; and processing the linked documents according to their scores.

The admitted prior art does not disclose or suggest this claimed combination. Among other things, the admitted prior art does not disclose or suggest assigning a score to each of the linked documents based on the scores of the one or more linking documents. Instead, the admitted prior art discloses assigning a rank to a document based on a degree to which search terms match the anchor descriptions in its backlink documents (page 3, lines 16-18). In other

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words, the rank (or score) of a document in the admitted prior art is not based on the rank (or score) of its backlink documents, but on a degree to which a user's search term query matches the anchor descriptions in the backlink documents.

For at least these reasons, Applicant submits that independent claim 18 is not anticipated by the admitted prior art.

Amended dependent claim 19 recites that the assigning step of claim 18 includes identifying a weighting factor for each of the linking documents, where the weighting factor is dependent on the number of links to the one or more linking documents, and adjusting the score of each of the one or more linking documents based on the identified weighting factor. The admitted prior art does not disclose or suggest the claimed combination of identifying a weighting factor for the linking documents that depends on the number of links to the linking documents, adjusting the score of the linking documents based on the identified weighting factor, and assigning a score to the linked documents based on the scores of the linking documents.

For at least these reasons and the reasons given with regard to claim 18, Applicant submits that dependent claim 19 is not anticipated by the admitted prior art.

Independent claim 36 recites a combination of steps for ranking a plurality of linked documents. The combination includes performing a random traversal of a plurality of linked documents, wherein performing a random traversal includes selecting a random link to traverse in a current linked document; for each linked document that is traversed, assigning a rank to the linked document that is dependent on the number of times the linked document has been traversed; and processing the plurality of linked documents according to their rank.

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The admitted prior art does not disclose or suggest this claimed combination. Among other things, the admitted prior art does not disclose or suggest performing a random traversal of a plurality of linked documents, where the random traversal includes selecting a random link to traverse in a current linked document and, for each linked document that is traversed, assigning a rank to the linked document that is dependent on the number of times the linked document has been traversed.

The Examiner alleged that the citation counting method described in Applicant's specification at page 3, lines 20-22, discloses assigning a rank to a linked document based on the number of times the linked document has been traversed. Applicant respectfully disagrees. At the cited section, Applicant discloses that the citation counting method determines "the importance of a document by counting its number of citations, or backlinks." Counting the number of citations for a document, however, is not the same as determining the number of times that document will be traversed. Therefore, this section of Applicant's specification in no way discloses or implies that a linked document is ranked based on the number of times that the linked document has been traversed by a random traversal, as recited in claim 36.

The Examiner also alleges that the admitted prior art discloses performing a random traversal at page 12, line 19. Applicant respectfully disagrees. At page 12, lines 16-20, of Applicant's specification, Applicant discloses that "[t]he $(1-\alpha)$ factor acts as a damping factor that limits the extent to which a document's rank can be inherited by children documents. This models the fact that users typically jump to a different place in the web after following a few links." Applicant notes that the portion of the specification cited by the Examiner does not appear in the Background of the Invention section, but rather describes Applicant's preferred

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embodiment. Furthermore, the mere notion that a user may completely leave a web page (rather than follow one of its links) in no way discloses or implies a computer implemented method that performs a random traversal that follows links from one page to another, as recited in claim 36.

Accordingly, Applicant submits that independent claim 36 is not anticipated by the admitted prior art.

In view of the foregoing, Applicant respectfully requests the reconsideration and withdrawal of the rejection of pending claims 18, 19, and 36.

The Examiner rejected pending claim 28 under 35 U.S.C. § 102(e) as allegedly anticipated by Barrett et al. The Examiner alleged that Barrett et al. discloses the invention as claimed. Applicant respectfully disagrees. Barrett et al. discloses a system that maintains information regarding remote sites accessed by a user and pre-downloads information that the user is predicted to likely want to access (Abstract).

By contrast, the invention recited in amended claim 28 includes a combination of steps for ranking a plurality of linked documents. The combination includes obtaining a plurality of documents, at least some of the documents being linked documents and at least some of the documents being linking documents, each of the linked documents being pointed to by a link in one or more of the linking documents; generating an initial estimate of a rank for each of the linked documents; updating the estimate of the rank for each of the linked documents using ranks for the one or more linking documents; and processing the linked documents according to their updated ranks.

Barrett et al. fails to disclose or suggest this claimed combination. Among other things,

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Barrett et al. fails to disclose or suggest updating an estimate of the rank for each of the linked documents using ranks for the one or more linking documents. Instead, Barrett et al. discloses predicting web pages that a user may visit based on the current web page and information regarding previous visits to the current web page (col. 7, line 34 - col. 8, line 26). Barrett et al. does not, however, disclose determining (i.e., updating an estimate of) a rank of a linked document based on the ranks for one or more linking documents, as recited in claim 28.

For at least these reasons, Applicant submits that independent claim 28 is not anticipated by Barrett et al. Applicant, therefore, respectfully requests the reconsideration and withdrawal of the rejection of claim 28.

The Examiner rejected pending claim 25 under 35 U.S.C. § 102(e) as allegedly anticipated by Oren et al. The Examiner alleged that Oren et al. discloses the invention as claimed. Applicant respectfully disagrees. Oren et al. discloses a system that ranks documents in a linked database based on the documents' relevancy to a selected option (col. 8, lines 14-19).

By contrast, the present invention recited in amended independent claim 25, for example, recites a combination of steps for determining a score for a plurality of linked documents. The combination includes obtaining a plurality of linked documents; selecting one of the linked documents; assigning a score to the selected document that is dependent on scores of documents that link to the selected document; and processing the linked documents according to their scores.

Oren et al. fails to disclose or suggest this claimed combination. Among other things, Oren et al. fails to disclose or suggest assigning a score to a document, selected from a plurality of linked documents, that is dependent on scores of documents that link to the selected

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document. Instead, Oren et al. discloses determining a rank of a linked document based on its relevancy to a selected option (i.e., a set of index terms) (col. 7, lines 8-10; col. 8, lines 14-19).

For at least these reasons, Applicant submits that independent claim 25 is not anticipated by Oren et al. Applicant, therefore, requests the reconsideration and withdrawal of the rejection of pending claim 25.

The Examiner rejected claims 20, 21, and 23 under 35 U.S.C. § 103(a) as allegedly unpatentable over Applicant's admission of prior art. Amended dependent claims 20, 21, and 23 recite that the assigning step of claim 18 includes identifying a weighting factor for each of the linking documents, where the weighting factor is dependent on criteria that differs in the different claims, and adjusting the score of each of the one or more linking documents based on the identified weighting factor. The admitted prior art does not disclose or suggest identifying a weighting factor or adjusting a score based on the identified weighting factor.

For at least these reasons and the reasons given with regard to claim 18, Applicant submits that dependent claims 20, 21, and 23 are patentable over the admitted prior art. Applicant, therefore, respectfully requests the reconsideration and withdrawal of the rejection of claims 20, 21, and 23.

The Examiner rejected claims 22, 24, and 37 under 35 U.S.C. § 103(a) as allegedly unpatentable over a combination of Applicant's admission of prior art and Barrett et al. The Examiner alleged that the combination discloses the invention substantially as claimed. Applicant respectfully disagrees.

Amended dependent claims 22 and 24 recite that the assigning step of claim 18 includes identifying a weighting factor for each of the linking documents, where the weighting factor is

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dependent on criteria that differs in the different claims, and adjusting the score of each of the one or more linking documents based on the identified weighting factor. As described above, the admitted prior art does not disclose or suggest identifying a weighting factor or adjusting a score based on the identified weighting factor. The disclosure of Barrett et al. provides nothing to cure the deficiencies in the disclosure of the admitted prior art. Accordingly, Applicant submits that dependent claims 22 and 24 are patentable over the admitted prior art and Barrett et al., whether taken alone or in any reasonable combination, for at least the foregoing reasons and the reasons given with regard to independent claim 18.

With regard to dependent claim 37, Applicant submits that the disclosure of Barrett et al. provides nothing to cure the deficiencies in the disclosure of the admitted prior art described above with regard to claim 36. Accordingly, Applicant submits that dependent claim 37 is patentable over the admitted prior art and Barrett et al., whether taken alone or in any reasonable combination, for at least the reasons given with regard to independent claim 36.

In view of the foregoing, Applicant respectfully requests the reconsideration and withdrawal of the rejections of claims 22, 24, and 37.

New claims 38-43 are dependent claims that ultimately depend upon independent claim 18. Applicant submits that these dependent claims are patentable over the prior art of record for at least the reasons given with regard to claim 18. New claims 44 and 45 are independent claims that recite features similar to independent claim 18. Applicant submits that these claims are, therefore, patentable over the prior art of record for the reasons given above with regard to independent claim 18.

In view of the foregoing amendments and remarks, Applicant respectfully requests the

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U.S. Patent Application Serial No. 09/004,827

Examiner's reconsideration of the application and the timely allowance of pending claims 18-25, 28, and 36-45.

To the extent necessary, a petition for an extension of time under 35 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1070 and please credit any excess fees to such deposit account.

Respectfully submitted,

HARRITY & SNYDER, L.L.P.

DRAFT

By: _____
Paul A. Harrity
Reg. No. 39,574

Dated:

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FACSIMILE TRANSMITTAL

TO:		FROM:	
Name:	Examiner Uyen Le Art Unit 2771	Name:	Paul Harrity
Fax No.:	(703) 308-5403	Phone No.:	(703) 525-7148
Phone No.:	(703) 305-4134	# Pages (incl. this):	16
Subject:	Draft Amendment	Date:	September 12, 2000

Message:

DRAFT AMENDMENT

PLEASE DELIVER TO EXAMINER LE IN ART UNIT 2771

If there is a problem with this transmission, notify the sender at the number above.

This facsimile is intended only for the individual to whom it is addressed and may contain information that is privileged, confidential, or exempt from disclosure under applicable law. If you have received this facsimile in error, please notify the sender immediately by telephone (collect), and return the original message by first-class mail to the above address.

Interview Summary

Application No. 09/004,827	Applicant(s) PAGE
Examiner Wayne Amsbury	Group Art Unit 2771

All participants (applicant, applicant's representative, PTO personnel):

- (1) Wayne Amsbury
- (2) UYEN LE
- (3) PAUL HARRITY
- (4) KULPREET RANA

Date of Interview Aug 22, 2000

Type: Telephonic Personal (copy is given to applicant applicant's representative).

Exhibit shown or demonstration conducted: Yes No. If yes, brief description:

Agreement was reached. was not reached.

Claim(s) discussed: 1-37

Identification of prior art discussed:

THE ADMITTED PRIOR ART OF THE SPECIFICATION AND THE BACKGROUND OF AUTHORITIES AND HUBS.

Description of the general nature of what was agreed to if an agreement was reached, or any other comments:

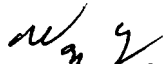
APPLICANT WILL AMEND SO THAT SOME CLAIMS WILL BE CORRECTED FOR NOTATIONAL AMBIGUITIES, AND SOME WILL BE AMENDED FOR CLARITY.

(A fuller description, if necessary, and a copy of the amendments, if available, which the examiner agreed would render the claims allowable must be attached. Also, where no copy of the amendments which would render the claims allowable is available, a summary thereof must be attached.)

- 1. It is not necessary for applicant to provide a separate record of the substance of the interview.

Unless the paragraph above has been checked to indicate to the contrary, A FORMAL WRITTEN RESPONSE TO THE LAST OFFICE ACTION IS NOT WAIVED AND MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a response to the last Office action has already been filed, APPLICANT IS GIVEN ONE MONTH FROM THIS INTERVIEW DATE TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW.

- 2. Since the Examiner's interview summary above (including any attachments) reflects a complete response to each of the objections, rejections and requirements that may be present in the last Office action, and since the claims are now allowable, this completed form is considered to fulfill the response requirements of the last Office action. Applicant is not relieved from providing a separate record of the interview unless box 1 above is also checked.


WAYNE AMSBURY
PRIMARY EXAMINER
ART UNIT 2771

Examiner Note: You must sign and stamp this form unless it is an attachment to a signed Office action.



Attorney Docket No. S96-213 (0026-0003)

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)	
)	
Lawrence PAGE)	
)	
Serial No.: 09/004,827	)	Group Art Unit: 2771
)	
Filed: January 9, 1998	)	Examiner: U. Le
)	
For: METHOD FOR NODE RANKING IN A)	
LINKED DATABASE)	

Commissioner for Patents
Washington, D.C. 20231

Sir:

ASSOCIATE POWER OF ATTORNEY

I hereby grant power of attorney to **HARRITY & SNYDER, L.L.P.**, Paul A. Harrity, Reg. No. 39,574; Glenn Snyder, Reg. No. 41,428; John E. Harrity, Reg. No. 43,367; Tony M. Cole, Reg. No. 43,417, both jointly and separately as attorneys with full power of substitution and revocation to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith, and to receive the Letters Patent.

Please send all future correspondence concerning this application to Harrity & Snyder, L.L.P. at the following address:

Harrity & Snyder, L.L.P.
3900 North Fairfax Drive
Suite 300
Arlington, Virginia 22203

Date: 8/18/00

Kulpreet S. Rana, Reg. No. 43,127
Director of Intellectual Property
Google, Inc.

08/17/2000 THU 13:30 FAX GOOGLE INC.

002/004



PATENT
Attorney Docket No. GP-000-00-US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of)
)
LAWRENCE PAGE)
)
Serial No. 09/004,827)
)
Filed: January 9, 1998)
)
For: METHOD FOR NODE RANKING IN A LINKED)
DATABASE)

Group Art Unit: 2771

Examiner: U. Le

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

REVOCATION OF POWER OF ATTORNEY
AND GRANT OF NEW POWER OF ATTORNEY

The undersigned, a representative authorized to sign on behalf of the assignee owning all of the interest in this patent, hereby revokes all previous powers of attorney or authorization of agent granted in this application before the date of execution hereof. The undersigned verifies that The Board of Trustees of the Leland Stanford Junior University is the assignee of the entire right, title, and interest in the patent application identified above by virtue of an assignment from the inventor recorded in the U.S. Patent and Trademark Office at Reel 9166, Frame 0035. The undersigned certifies that the evidentiary documents have been reviewed and to the best of the undersigned's

knowledge and belief, title is in the assignee The Board of Trustees of the Leland Stanford Junior University.

The undersigned hereby grants its power of attorney to Kulpreet S. Rana, Reg. No. 43,127, as its attorney with full power of substitution and revocation to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith, and to receive the Letters Patent.

Please send all future correspondence concerning this application to Google, Inc., at the following address:

Kulpreet S. Rana
Google, Inc.
2400 Bayshore Parkway
Mountain View, California 94043

Dated:

Aug 1, 2000

BY:

Katharine Ku

Katharine Ku
Director, Technology Licensing
The Board of Trustees of the Leland
Stanford Junior University

Inventor(s): Lawrence PAGE

Appln. No. 09/004,827

Docket No.: S96-213 (0026-0003)

Work Atty: PAH

Date: August 18, 2000

Title: METHOD FOR NODE RANKING IN A LINKED DATABASE

The following was/were received in the U.S. Patent and Trademark Office on the date stamped hereon:

- Revocation of Power of Attorney and Grant of New Power of Attorney
- Associate Power of Attorney



PATENT
Attorney Docket No. GP-000-00-US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of)	
)	
LAWRENCE PAGE)	
	)	Group Art Unit: 2771
Serial No. 09/004,827)	
	)	Examiner: U. Le
Filed: January 9, 1998)	
)	
For: METHOD FOR NODE RANKING IN A LINKED)	
DATABASE)	

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

REVOCATION OF POWER OF ATTORNEY
AND GRANT OF NEW POWER OF ATTORNEY

The undersigned, a representative authorized to sign on behalf of the assignee owning all of the interest in this patent, hereby revokes all previous powers of attorney or authorization of agent granted in this application before the date of execution hereof. The undersigned verifies that The Board of Trustees of the Leland Stanford Junior University is the assignee of the entire right, title, and interest in the patent application identified above by virtue of an assignment from the inventor recorded in the U.S. Patent and Trademark Office at Reel 9166, Frame 0035. The undersigned certifies that the evidentiary documents have been reviewed and to the best of the undersigned's

knowledge and belief, title is in the assignee The Board of Trustees of the Leland Stanford Junior University.

The undersigned hereby grants its power of attorney to Kulpreet S. Rana, Reg. No. 43,127, as its attorney with full power of substitution and revocation to prosecute this application and to transact all business in the Patent and Trademark Office, connected therewith, and to receive the Letters Patent.

Please send all future correspondence concerning this application to Google, Inc., at the following address:

Kulpreet S. Rana
Google, Inc.
2400 Bayshore Parkway
Mountain View, California 94043

Dated:

Aug 1, 2000

BY:

Katharine Ku

Katharine Ku
Director, Technology Licensing
The Board of Trustees of the Leland
Stanford Junior University

PATENT
Attorney Docket No. S96-213 (0026-0003)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)	
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Lawrence PAGE)	
)	
Serial No.: 09/004,827)	Group Art Unit: 2771
)	
Filed: January 9, 1998)	Examiner: U. Le
)	
For: METHOD FOR NODE RANKING IN A)	
LINKED DATABASE)	

Commissioner for Patents
Washington, D.C. 20231

Sir:

ASSOCIATE POWER OF ATTORNEY

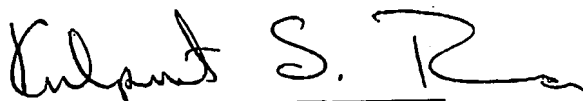
I hereby grant power of attorney to HARRITY & SNYDER, L.L.P., Paul A. Harrity, Reg. No. 39,574; Glenn Snyder, Reg. No. 41,428; John E. Harrity, Reg. No. 43,367; Tony M. Cole, Reg. No. 43,417, both jointly and separately as attorneys with full power of substitution and revocation to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith, and to receive the Letters Patent.

Please send all future correspondence concerning this application to Harrity & Snyder, L.L.P. at the following address:

Harrity & Snyder, L.L.P.
3900 North Fairfax Drive
Suite 300
Arlington, Virginia 22203

Date:

8/18/00



Kulpreet S. Rana, Reg. No. 43,127
Director of Intellectual Property
Google, Inc.



**UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

BC8

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/004,827	01/09/98	PAGE	L 596-213

021912
RITTER VAN PELT & YI, L.L.P.
4906 EL CAMINO REAL
SUITE 205
LOS ALTOS CA 94022

LM02/0612

EXAMINER

LE, U

ART UNIT PAPER NUMBER

2771 16

DATE MAILED: 06/12/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No. 09/004,827	Applicant(s) PAGE, LAWRENCE	
Examiner Uyen T Le	Art Unit 2771	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- 1) Responsive to communication(s) filed on 27 April 2000 and 01 May 2000.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-7, 9-15, 18-33, 36 and 37 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) 1-7 and 9-15 is/are allowed.
- 6) Claim(s) 18-33, 36 and 37 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) The proposed drawing correction filed on 01 May 2000 is: a) approved b) disapproved.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
a) All b) Some * c) None of the CERTIFIED copies of the priority documents have been:
1. received.
2. received in Application No. (Series Code / Serial Number) _____ .
3. received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

- 14) Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

- 15) Notice of References Cited (PTO-892)
- 16) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
- 18) Interview Summary (PTO-413) Paper No(s). _____ .
- 19) Notice of Informal Patent Application (PTO-152)
- 20) Other:

Art Unit: 2771

DETAILED ACTION

1. Applicant's amendment to claims 18, 25-29, 31, 33, 36 and cancellation of claims 8, 16, 17, 34, 35 are acknowledged. However, due to prior art newly found, the finality of the Office Action mailed 9 March 2000 is withdrawn.

2. Applicant's amendment to the drawings is acknowledged. Consequently, objection to the drawings is withdrawn.

Claim Objections

3. Claims 1 and 9 are objected to because of the following informalities: in claims 1 and 9, the sentence of part (b) is incomplete. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

4. Claims 18, 19, 26, 36 are rejected under 35 U.S.C. 102(a) as being anticipated by applicant's admitted prior art (AAPA) at pages 3 and 12.

Claims 18, 19 merely read on the fact that a rank of a document is assigned based on the degree to which the search terms match the anchor descriptions in its backlink documents (see page 3, lines 13-18). Clearly, the backlink documents and the ranked documents are

Art Unit: 2771

linked and the documents are processed according to their ranks. The claimed “wherein each of the ranks of the one or more of the plurality of linked documents are adjusted by a weight” merely reads on the fact that a rank inherently includes an adjusted weight since a document is ranked depending on how many backlink documents it has.

Claim 26 merely reads on the fact that the prior art assigns a rank to a document based on the degree to which the search terms match the anchor descriptions in its backlink documents (see page 3, lines 13-18). Clearly, the backlink documents and the ranked documents are linked and the documents are processed according to their ranks. The claimed “wherein the processing includes crawling the plurality of linked documents” merely reads on the fact that the user follows the links in the method of the prior art.

Regarding claim 36, the claimed “wherein performing a random traversal includes selecting a random link to traverse in a current linked document” merely reads on the well known fact admitted by the applicant at page 12, line 19 that users typically jump to a different place while surfing the web. Furthermore, the claimed steps of assigning a rank to the linked document dependent on the number of times the linked document has been traversed is met when the prior art citation counting method assigns a rank to a document according to the number of documents pointing to it (see page 3, lines 20-22). Clearly, the step of processing linked documents according to their rank had been performed in the prior art method since the whole purpose of ranking documents is for orderly processing them according to their rank.

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5. Claim 28 is rejected under 35 U.S.C. 102(e) as being anticipated by Barrett et al (US 5,727,129).

Regarding claim 28, Barrett discloses a computer implemented method of ranking a plurality of linked documents including obtaining a plurality of linked documents, generating an initial estimate of the rank of each of one or more plurality of linked documents and updating the estimate (see the abstract, Figures 4-8). Clearly, each linked document is assigned a rank that is dependent on ranks of the one or more of the plurality of linked document and documents are processed according to their rank.

6. Claims 25, 27, 29-33 are rejected under 35 U.S.C. 102(e) as being anticipated by Oren et al (US 5,630,117).

Claim 25 merely read on the fact that a document is assigned a rank based on the degree to which the search terms match the anchor descriptions in its backlink documents (see Figures 3, 4). Clearly, the linked documents are processed according to their ranks. The claimed “wherein the processing includes displaying links to the plurality of linked documents as results from a search” is met when Oren shows results of a search for example of a database consisting of documents relating to the Civil War (see column 9, lines 41-47, Figures 5a-f).

Regarding claim 27, clearly the links are displayed as a directory (see Figure 5a).

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Claim 29 differs from claim 25 by displaying links to the linked documents and annotations representing the relative importance or rank or of each linked document. This feature merely reads on Figure 5b of Oren showing additional information of the importance of a document once the user picks the personality of a slave.

Regarding claim 30, Oren discloses that the annotation is text (see Figure 5b).

Claim 31 merely differs from claim 25 by processing documents according to textual matching. Oren clearly shows that textual matching is well known in the art in processing documents (see column 1, lines 62-66).

Claim 32 merely reads on the fact that textual matching inherently includes anchor text associated with the links.

Regarding claim 33, clearly, the linked documents are processed according to their grouping (see Figure 5b).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2771

7. Claims 20, 21, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art (AAPA) at page 12.

Claim 20 merely reads on the well known fact admitted by the applicant at page 12, line 19 that users typically jump to a different place while surfing the web. Therefore, it would have been obvious to one of ordinary skill in the art to include making the weight dependent on an estimation of a probability that a linked document will be accessed in the method of the prior art since it is typical for users to jump from unimportant sites while surfing.

Claim 21 merely reads on the fact that recent documents have more up-to-date information than documents of an earlier date. Therefore, it would have been obvious to one of ordinary skill in the art to include making the weight dependent on the last update time of the one or more plurality of linked documents in the method of the prior art in order to rank documents based on their updated information.

Claim 23 merely reads on the fact that graphic effects such as large fonts catch viewer's attention more than small fonts. Therefore, it would have been obvious to one of ordinary skill in the art to include making the weight dependent on the visibility of the links in the method of the prior art in order to rank documents according on how visually attractive they are to viewers.

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8. Claims 22, 24, 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art (AAPA), in view of Barrett et al (US 5,727,129).

Regarding claim 22, although AAPA does not specify that the weight is dependent on whether the documents are selected documents or root, this feature merely reads on the fact that the method of Barrett gives more weight to sites accessed repeatedly recently (see column 7, line 57- column 8, line 2).

Regarding claim 24, although AAPA does not specify that the weight is dependent on a particular user's preferences, the rate at which users access the linked documents or the importance of the documents, it is well known in the art as shown by Barret that a user has a pattern of accessing web pages and that the statistics can be used to identify which links the user is likely to access (see the abstract). Therefore, it would have been obvious to one of ordinary skill in the art to include making the weight dependent on a particular user's preferences, the rate at which users access the linked documents or the importance of the documents in the method of the prior art in order to prefetch links of interest to a specific user based on his history of accessing the network.

Regarding claim 37, although AAPA does not specify that there is a predetermined probability that the next linked document to be traversed will be a random one of the plurality of linked documents, this feature merely reads on the method of Barrett predicting which of several displayed hyperlinks are likely to be accessed by a user in performing a search (see column 3, lines 61-63). Clearly, in the process of predicting, a

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predetermined probability that the next linked document to be traversed will be a random one has to be present. Therefore, it would have been obvious to one of ordinary skill in the art to include a predetermined probability that the next linked document to be traversed will be a random one in the method of AAPA in order to predict users' needs and provide a fast response.

Allowable Subject Matter

9. Claims 1-7, 9-15 are allowed.

The following is an examiner's statement of reasons for allowance: the prior art of record does not disclose or make obvious a computerized method for ranking documents represented as nodes including determining the rank of a node from a mathematical algorithm involving an initial N-dimensional vector wherein each component represents a probability that a user will arrive at a given node after a number of forward links and a NxN transition probability matrix wherein each element ij of the matrix represents a probability of moving from node i to node j ; or otherwise suggest its use together with all the limitations recited in claims 1 and 9.

All dependent claims 2-7, 10-15 being further limiting and definite are also allowable

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosures.

Wang et al "Prefetching in Worl Wide Web", IEEE 1996, pages 28-32.

Ramer et al "Similarity, Probability and Database Organisation: Extended Abstract", IEEE 1996, pages 272-277.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Uyen Le whose telephone number is (703) 305-4134. The examiner can be reached on Monday through Thursday from 7:00am to 5:30pm.

If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Thomas Black can be reached on (703)305-9707.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington D.C. 20231

or faxed to: (703)308-9051, (for formal communications intended for entry)

or: (703)308-5403 (for informal or draft communications, please label

PROPOSED or DRAFT)

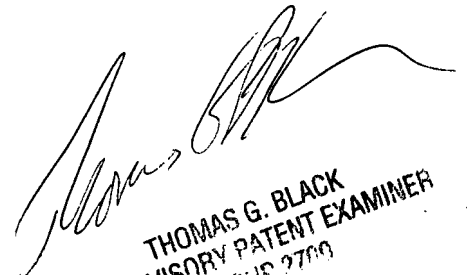
Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

Art Unit: 2771

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UL

06/06/00



THOMAS G. BLACK
SUPERVISORY PATENT EXAMINER
GROUP 2700

FORM PTO-892		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		SERIAL NO. 09/004,827	GROUP ART UNIT 2771	ATTACHMENT TO PAPER NO.	16
NOTICE OF REFERENCES CITED				APPLICANT(S)			
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U.S. PATENT DOCUMENTS							
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	R	Wang et al "Prefetching in Worl Wide Web", IEEE 1996, pages 28-32.					
	S	Ramer et al "Similarity, Probability and Database Organisation: Extended Abstract", IEEE 1996, pages 272-276.					
	T						
	U						
EXAMINER Uyen Le			DATE June 6, 2000				
Form892ccs2106b							
* A copy of this reference is not being furnished with this office action. (See Manual of Patent Examining Procedure, section 707.05(a).)							

	Type	Hits	Search Text	DBs	Time Stamp	Comments	Error Definition
1	BRS	4	backlink?	USPAT	2000/06/06 11:27		0
2	BRS	6	(((NODE ADJ RANK\$)) AND RANDOM)	USPAT	2000/02/29 16:38		0
3	BRS	27	(NODE ADJ RANK\$)	USPAT	2000/02/29 17:31		0
4	BRS	107	(RANK\$ NEAR3 NODE)	USPAT	2000/02/29 17:31		0
5	BRS	3	(((RANK\$ NEAR3 NODE)) SAME IMPORTANCE)	USPAT	2000/02/29 17:33		0
6	BRS	4	(((RANK\$ NEAR3 NODE)) SAME IMPORTANT)	USPAT	2000/02/29 17:33		0
7	BRS	5	"5812776"	USPAT	2000/05/08 11:09		0
8	BRS	79	(CRAWL\$ AND RANK\$)	USPAT	2000/05/08 14:16		0
9	BRS	44	(((CRAWL\$ AND RANK\$)) AND DISPLAY\$)	USPAT	2000/05/08 14:25		Truncation Overflow. Return string from Server is: 5'0'0 'DIS
10	BRS	16	((((CRAWL\$ AND RANK\$)) AND DISPLAY\$)) AND WEB)	USPAT	2000/05/08 15:07		0
11	BRS	109	(RANK\$ NEAR3 DOCUMENT?)	USPAT	2000/05/08 15:08		0

Type	Hits	Search Text	DBs	Time Stamp	Comments	Error Definition
12 BRS	17305	(LINK\$ SAME DISPLAY\$)	USPAT	2000/05/08 15:20		Truncation Overflow. Return string from Server is: 5'0'0 'LIN
13 BRS	473	(LINK? NEAR3 DISPLAY\$)	USPAT	2000/05/08 15:21		Truncation Overflow. Return string from Server is: 5'0'0 'DIS
14 BRS	3	((RANK\$ NEAR3 DOCUMENT?)) SAME ((LINK? NEAR3 DISPLAY\$))	USPAT	2000/05/08 17:34		
15 BRS	1	"60555569"	USPAT	2000/05/08 17:35		
16 BRS	161	(PROBABILITY NEAR2 WEIGHT)	USPAT	2000/05/08 17:35		
17 BRS	6	((PROBABILITY NEAR2 WEIGHT)) AND WEB)	USPAT	2000/05/08 17:35		
18 BRS	1	"5572643".PN.	USPAT	2000/05/08 17:36		

	Type	Hits	Search Text	DBs	Time Stamp	Comments	Error Definition	Errors
19	BRS	1	"5727129".PN.	USPAT	2000/05/08 17:37			0
20	BRS	1	"5802292".PN.	USPAT	2000/05/08 17:38			0
21	BRS	1	"5835905".PN.	USPAT	2000/05/08 17:40			0
22	BRS	1	"5878223".PN.	USPAT	2000/05/08 17:41			0
23	BRS	3	"5924090"	USPAT	2000/05/18 17:48			0
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In re application of:)
)
LAWRENCE PAGE)
)
Application No.: 09/004,827)
)
Filed: January 9, 1998)
)
For: METHOD FOR NODE RANKING IN A LINKED)
DATABASE)

Examiner: U. Le
Group Art Unit: 2771
Date: May 23, 2000

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RITTER, VAN PELT & YI LLP
4906 El Camino Real
Suite 205
Los Altos, CA 94022

Please direct all calls to the undersigned at (650) 903-3500.

Respectfully submitted,



Michael J. Ritter
Registration No. 36,653

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June 21 - 24, 1992, Copenhagen Denmark**[access](#) | [related SIGs](#) | [related conferences](#)**Integration of probabilistic fact and text retrieval**

Page 211

Norbert Fuhr

metadata: [abstract](#) | [index terms](#)full text: [pdf 1135 KB](#)[\[Find Related Articles | Add to Binder \]](#)**ABSTRACT**

In this paper, a model for combining text and fact retrieval is described. A query is a set of conditions, where a single condition is either a text or fact condition. Fact conditions can be interpreted as being vague, thus leading to nonbinary weights for fact conditions with respect to database objects. For text conditions, we use descriptions of the occurrence of terms in documents instead of precomputed indexing weights, thus treating terms similar to attributes. Probabilistic indexing weights for conditions are computed by introducing the notion of correctness (or acceptability) of a condition w.r.t. an object. These indexing weights are used in retrieval for a probabilistic ranking of objects based on the retrieval for a probabilistic ranking of objects based on the retrieval-with-probabilistic-indexing (RPI) model, for which a new derivation is given here.

**INDEX TERMS****Categories and Subject Descriptors:**

Information Systems - Information Storage and Retrieval - Content Analysis

and Indexing (H.3.1): **Indexing methods**; Information Systems -Information Storage and Retrieval - Information Search and Retrieval (H.3.3): **Retrieval models**; Computing Methodologies -Document and Text Processing - Document and Text Editing (I.7.1); Information Systems -Information Interfaces and Presentation - User Interfaces (H.5.2);

General Terms:

Algorithms, Languages

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June 27 - July 1, 1993, Pittsburgh, PA USA**[access](#)[related SIGs](#)[related conferences](#)**A probabilistic relational model for the integration of IR and databases**

Page 309

Norbert Fuhr

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ABSTRACT

In this paper, a probabilistic relational model is presented which combines relational algebra with probabilistic retrieval. Based on certain independence assumptions, the operators of the relational algebra are redefined such that the probabilistic algebra is a generalization of the standard relational algebra. Furthermore, a special join operator implementing probabilistic retrieval is proposed. When applied to typical document databases, queries can not only ask for documents, but for any kind of object in the database. In addition, an implicit ranking of these objects is provided in case the query relates to probabilistic indexing or uses the probabilistic join operator. The proposed algebra is intended as a standard interface to combined database and IR systems, as a basis for implementing user-friendly interfaces.



INDEX TERMS**Categories and Subject Descriptors:**

Information Systems -Information Storage and Retrieval - Information Search

and Retrieval (H.3.3): **Retrieval models**; Information Systems -Database Management - Languages (H.2.3): **SQL**; Information Systems -Database Management - Logical Design (H.2.1): **Data models**; Computing Methodologies -Symbolic and Algebraic Manipulation - General (I.1.0);

General Terms:

Algorithms, Design, Languages

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A user-centred evaluation of ranking algorithms for interactive query expansion

Page 146

Efthimis N.Efthimiadis

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ABSTRACT

The evaluation of 6 ranking algorithms for the ranking of terms for query expansion is discussed within the context of an investigation of interactive query expansion and relevance feedback in a real operational environment. The yardstick for the evaluation was provided by the user relevance judgements on the lists of the candidate terms for query expansion. The evaluation focuses on the similarities in the performance of the different algorithms and how the algorithms with similar performance treat terms.



INDEX TERMS

General Terms:

Algorithms, Performance, Theory

Categories and Subject Descriptors:

Information Systems -Information Storage and Retrieval - Information Search and Retrieval (H.3.3): **Query formulation**; Information Systems -Information

Storage and Retrieval - Content Analysis and Indexing (H.3.1): **Abstracting methods;**

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June 27 - 29, 1994, Cape May, NJ USA](#)[access](#)[related SIGs](#)[related conferences](#)**List ranking and list scan on the Cray C-90**

Pages 104-113

Margaret Reid-Miller

metadata:  [abstract](#) [index terms](#) [reviews](#)full text:  [pdf](#) 1096 KB[\[Find Related Articles | Add to Binder \]](#)**ABSTRACT**

List ranking and list scan are two primitive operations used in many parallel algorithms that use list, trees, and graph data structures. But vectorizing and parallelizing list ranking is a challenge because it is highly communication intensive and dynamic. In addition, the serial algorithm is very simple and has very small constants. In order to compete, a parallel algorithm must also be simple and have small constants. A parallel algorithm due to Wyllie is such an algorithm, but it is not work efficient--its performance degrades for longer and longer linked lists. In contrast, work efficient PRAM algorithms developed to date have very large constants. It does not achieve $O(\log n)$ running time, but we contend that work efficiency and small constants is more important, given that vector and multiprocessor machines are used for problems that are much larger than the number of processors and, therefore, the $O(\log n)$ running time, but we contend that work efficiency and small constants is more important, given that vector and multiprocessor machines are used for problems that are much larger than the number of processors and, therefore, the $O(\log n)$ time is never achieved in practice. In particular, to the best of our knowledge, our implementation of list ranking and list scan on the CRAY C-90 is the fastest implementation to date. In addition, it is the first implementation of which we are aware that outperforms fast workstations. The success of our algorithm is due to its relatively large grain size and simplicity of the inner loops, and the success of the implementation is due to pipelining reads and writes through vectorization to hide latency, minimizing load balancing by

deriving equations for predicting and optimizing performance, and avoiding conditional tests except when load balancing.



INDEX TERMS

Categories and Subject Descriptors:

Theory of Computation -Analysis of Algorithms and Problem Complexity - Nonnumerical Algorithms and Problems (F.2.2); Computer Systems Organization -Processor Architectures - Multiple Data Stream Architectures (Multiprocessors) (C.1.2); Theory of Computation -Computation by Abstract Devices - Modes of Computation (F.1.2): **Parallelism and concurrency**;

General Terms:

Algorithms, Measurement, Performance, Theory



REVIEWS

From Computing Reviews

William Fennell Smyth

Given a list L of n elements x_1, x_2, \dots, x_n , the list scan problem requires that, at each position i of L , the sum $x_1 + x_2 + \dots + x_i$ be formed, where "+" is some binary associative operator. The list ranking problem is the special case of list scan that arises when "+" signifies ordinary addition and every $x_i = 1$. List scan occurs frequently as a subproblem in many parallel combinatorial algorithms.

This paper describes a new list scan algorithm and gives its implementation on the Cray C-90 vector multi-processor. The new algorithm is both work efficient (that is, it executes in $O(n)$ time) and fast (that is, the constants of proportionality are small), and for large n , its execution time on the C-90 is an order of magnitude faster than that of other known algorithms. The main idea of the new algorithm is to break up L into m sublists, where usually $m \approx np$, if p is the number of processors; each processor then deals with m/p sublists. To compensate for variation in the lengths of the sublists, periodic load balancing is carried out: unprocessed elements in long sublists are packed together into contiguous locations. The author points out that, since the C-90 can be thought of as approximating an exclusive read exclusive write parallel random access machine (EREW PRAM), the new algorithm may provide a basis for the efficient execution of known PRAM algorithms that depend on list scan for their execution.

The paper is interesting and well written, but it suffers from numerous syntactical and grammatical anomalies that would certainly have been eliminated by thorough copyediting and proofreading.

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CNF			<p><u>Similarity, probability and database organisation</u> <i>Ramer, A.; Yu, H.-R.</i> Fuzzy Systems Symposium, 1996. Soft Computing in Intelligent Systems and Information Processing., Proceedings of the 1996 Asian , 1996 , Page(s): 272 -277</p>
CNF			<p><u>The other variant Boltzmann machine</u> <i>Liou, C.-Y.; Lin, S.-L.</i> Neural Networks, 1989. IJCNN., International Joint Conference on , 1989 , Page(s): 449 -454 vol. 1</p>
PER			<p><u>Competitive optimality of source codes</u> <i>Yamamoto, H.; Itoh, T.</i> Information Theory, IEEE Transactions on Volume: 41 6 2 , Nov. 1995 , Page(s): 2015 -2019</p>

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PER			<p><u>A performance study of instruction cache prefetching methods</u> <i>Hsu, W.-C.; Smith, J.E.</i> Computers, IEEE Transactions on Volume: 47 5 , May 1998 , Page(s): 497 -508</p>
CNF			<p><u>A compiler-assisted data prefetch controller</u> <i>Vander Wiel, S.P.; Lilja, D.J.</i> Computer Design, 1999. (ICCD '99). International Conference on , 1999 , Page(s): 372 -377</p>
CNF			<p><u>Performance evaluation of the fixed sequential prefetching on a bus-based multiprocessor: preliminary results</u> <i>Ordonez, E.D.M.; Kofuji, S.T.</i> Parallel Architectures, Algorithms, and Networks, 1996. Proceedings., Second International Symposium on , 1996 , Page(s): 487 -493</p>
PER			<p><u>Web prefetching in a mobile environment</u> <i>Zhimei Jiang; Kleinrock, L.</i> IEEE Personal Communications Volume: 5 5 , Oct. 1998 , Page(s): 25 -34</p>
CNF			<p><u>Instruction cache prefetching with extended BTB</u> <i>Shuh-An Chi; R-Ming Shiu; Jih-Chang Chiu; Si-En Chang; Chung-Ping Chung</i> Parallel and Distributed Systems, 1997. Proceedings., 1997 International Conference on , 1997 , Page(s): 360 -365</p>
PER			<p><u>Non-referenced prefetch (NRP) cache for instruction prefetching</u> <i>Park, G.-H.; Kwon, O.-Y.; Han, T.-D.; Kim, S.-D.</i></p>

- CNF   **Computers and Digital Techniques, IEE Proceedings-**
Volume: 143 1 , Jan. 1996 , Page(s): 37 -43
Stride-directed prefetching for secondary caches
Kim, S.; Veidenbaum, A.V.
Parallel Processing, 1997., Proceedings of the 1997
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- CNF   **Improving the effectiveness of software prefetching with adaptive executions**
Saavedra, R.H.; Daeyeon Park
Parallel Architectures and Compilation Techniques, 1996.,
Proceedings of the 1996 Conference on , 1996 , Page(s): 68
-78
- CNF   **Wrong-path instruction prefetching**
Pierce, J.; Mudge, T.
Microarchitecture, 1996. MICRO-29.Proceedings of the 29th
Annual IEEE/ACM International Symposium on , 1996 ,
Page(s): 165 -175
- CNF   **Cooperative prefetching: compiler and hardware support for effective instruction prefetching in modern processors**
Chi-Keung Luk; Mowry, T.C.
Microarchitecture, 1998. MICRO-31. Proceedings. 31st
Annual ACM/IEEE International Symposium on , 1998 ,
Page(s): 182 -193
- CNF   **Data prefetching with co-operative caching**
Chi-Hung Chi; Lau, S.L.
High Performance Computing, 1998. HIPC '98. 5th
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- CNF   **Data prefetching for distributed shared memory systems**
Lai, A.I.-C.; Chin-Laung Lei
System Sciences, 1996., Proceedings of the Twenty-Ninth
Hawaii International Conference on ,
Volume: 1 , 1996 , Page(s): 102 -110 vol.1
- PER   **Evaluation of hardware-based stride and sequential prefetching in shared-memory multiprocessors**
Dahlgren, F.; Stenstrom, P.
Parallel and Distributed Systems, IEEE Transactions on
Volume: 7 4 , April 1996 , Page(s): 385 -398
- PER   **Instruction cache prefetching directed by branch prediction**
Chiu, J.-C.; Shiu, U.-M.; Chi, S.A.; Chung, C.-P.
Computers and Digital Techniques, IEE Proceedings-
Volume: 146 5 , Sept. 1999 , Page(s): 241 -246
- CNF   **Overcoming limitations of prefetching in multiprocessors by compiler-initiated coherence actions**
Skeppstedt, J.
Parallel Architectures and Compilation Techniques., 1997.
Proceedings., 1997 International Conference on , 1997 ,
Page(s): 272 -283

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|-----|---|---|--|
| CNF |  |  | <u>A prefetching technique for irregular accesses to linked data structures</u>
<i>Karlsson, M.; Dahlgren, F.; Stenstrom, P.</i>
High-Performance Computer Architecture, 2000. HPCA-6. Proceedings. Sixth International Symposium on , 1999 , Page(s): 206 -217 |
| CNF |  |  | <u>An improved lookahead instruction prefetching</u>
<i>Gi-Ho Park; Oh-Young Kwon; Tack-Don Han; Shin-Dug Kim; Sung-Bong Yang</i>
High Performance Computing on the Information Superhighway, 1997. HPC Asia '97 , 1997 , Page(s): 712 -715 |
| CNF |  |  | <u>Sunder: a programmable hardware prefetch architecture for numerical loops</u>
<i>Tzi-cker Chiueh</i>
Supercomputing '94., Proceedings , 1994 , Page(s): 488 -497 |
| CNF |  |  | <u>Prefetching in supercomputer instruction caches</u>
<i>Smith, J.E.; Hsu, W.-C.</i>
Supercomputing '92., Proceedings , 1992 , Page(s): 588 -597 |
| CNF |  |  | <u>The network effects of prefetching</u>
<i>Crovella, M.; Barford, P.</i>
INFOCOM '98. Seventeenth Annual Joint Conference of the IEEE Computer and Communications Societies. Proceedings. IEEE Volume: 3 , 1998 , Page(s): 1232 -1239 vol.3 |
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<i>Yue Liu; Kaeli, D.R.</i>
Computer Design: VLSI in Computers and Processors, 1996. ICCD '96. Proceedings., 1996 IEEE International Conference on , 1996 , Page(s): 225 -230 |
| CNF |  |  | <u>Prefetching scheme for image processing on shared memory multiprocessors</u>
<i>Rhee, Y.; Lee, J.</i>
Image Processing, 1996. Proceedings., International Conference on Volume: 1 , 1996 , Page(s): 157 -160 vol.2 |
| CNF |  |  | <u>An effective programmable prefetch engine for on-chip caches</u>
<i>Tien-Fu Chen</i>
Microarchitecture, 1995., Proceedings of the 28th Annual International Symposium on , 1995 , Page(s): 237 -242 |
| CNF |  |  | <u>Hybrid compiler/hardware prefetching for multiprocessors using low-overhead cache miss traps</u>
<i>Skeppstedt, J.; Dubois, M.</i>
Parallel Processing, 1997., Proceedings of the 1997 International Conference on , 1997 , Page(s): 298 -305 |

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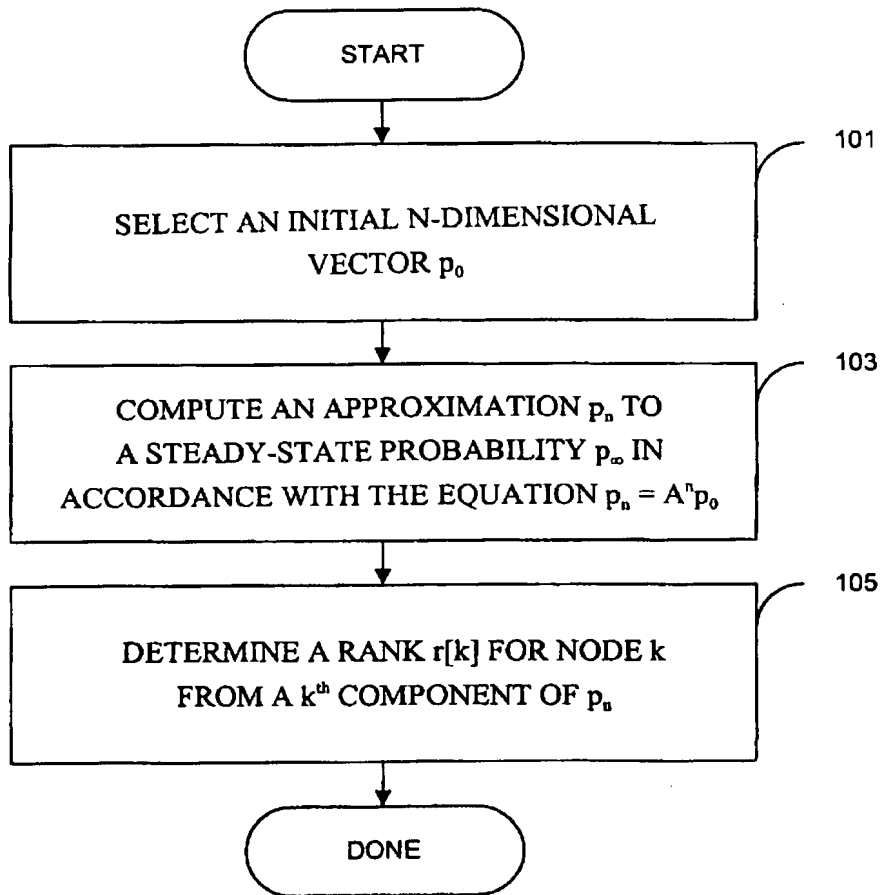


FIG. 3



Agents Docket No. S96-213

#74
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PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of)	
LAWRENCE PAGE	)	Examiner: U. Le
Application No.: 09/004,827	)	Art Unit: 2771
Filed: January 9, 1998)	
For: METHOD FOR NODE RANKING)	April 28, 2000
IN A LINKED DATABASE)	

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AMENDMENT AFTER FINAL

Assistant Commissioner for Patents
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Sir:

In response to the Office Action mailed March 9, 2000, please amend the application as follows.

In the Drawings

As requested in the Office Action, please add Figure 3 (enclosed). The figure is a flowchart of claim 1 as originally filed in the application so no new matter has been added by this drawing.

REMARKS

The enclosed Figure 3 was inadvertently not sent with the amendment submitted on April 25, 2000. The Applicant submits that entry of the drawing is proper for the reasons set forth in the amendment.

For the foregoing reasons, Applicant believes all the pending claims are in condition for allowance and should be passed to issue. If the Examiner feels that a telephone conference would in any way expedite the prosecution of the application, please do not hesitate to call the undersigned at (650) 462-6377.

Respectfully submitted,



Joshua D. Isenberg
Reg. No. 41,088

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Approved
5 May 00
ML

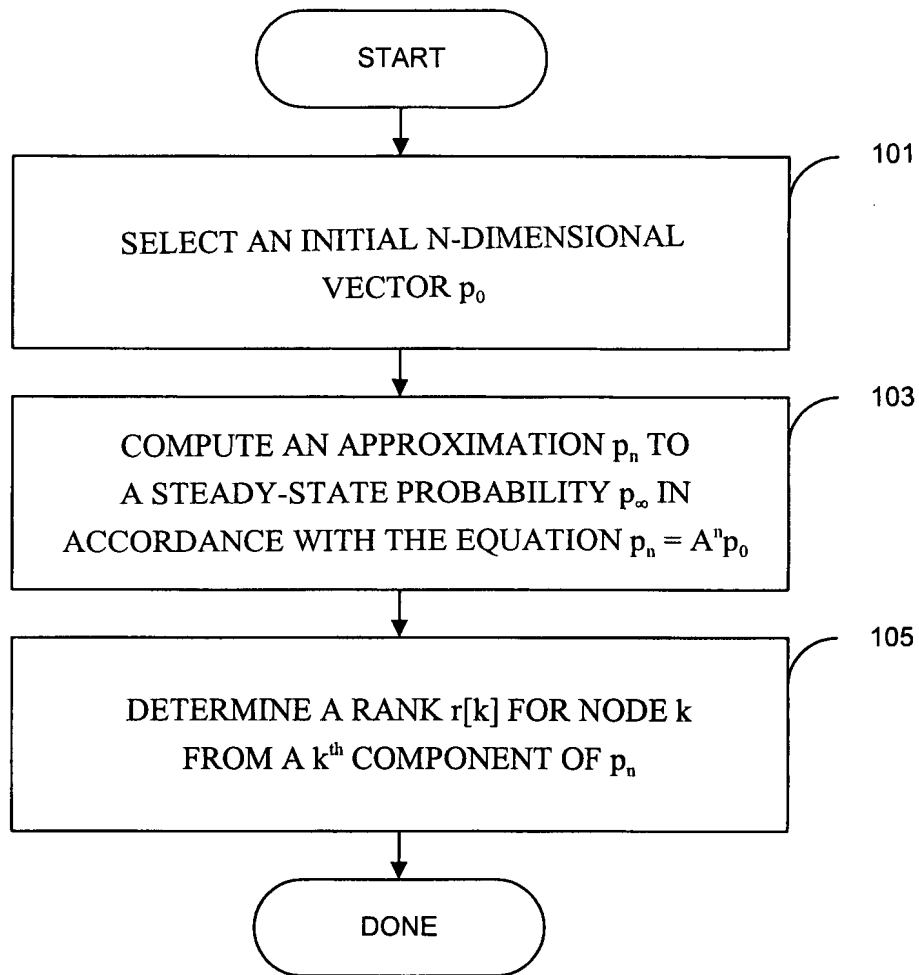
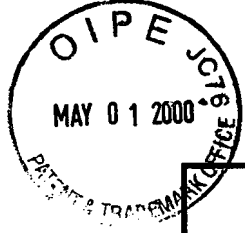


FIG. 3



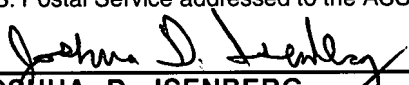
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TRANSMITTAL FORM (for all correspondence after initial filing)	Attorney Docket No. S96-213	Total Pages
	Application Number 09/004,827	
	Filing Date 1/9/98	
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Agents Docket No. S96-213

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of)
LAWRENCE PAGE)
Application No.: 09/004,827)
Filed: January 9, 1998)
For: METHOD FOR NODE RANKING)
IN A LINKED DATABASE)

Examiner: U. Le
Art Unit: 2771
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AMENDMENT AFTER FINAL

Assistant Commissioner for Patents
Box AF
Washington, D.C. 20231

Sir:

In response to the Office Action mailed March 9, 2000, please amend the application as follows.

In the Drawings

As requested in the Office Action, please add Figure 3 (enclosed). The figure is a flowchart of claim 1 as originally filed in the application so no new matter has been added by this drawing or the following description thereof.

In the Specification

On page 6, line 17, please insert "Fig. 3 is a flowchart of one embodiment of the invention."

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On page 11, line 26, please insert the following paragraph:

Bi
“FIG. 3 shows one embodiment of a computer implemented method for calculating an importance rank for N linked nodes of a linked database. At a step 101, an initial N-dimensional vector p_0 is selected. An approximation p_n to a steady-state probability p_∞ in accordance with the equation $p_n = A^n p_0$ is computed at a step 103. Matrix A can be an NxN transition probability matrix having elements $A[i][j]$ representing a probability of moving from node i to node j. At a step 105, a rank $r[k]$ for node k from a k^{th} component of p_n is determined.”

In the Claims

For the Examiner's convenience, all claims pending are shown below. Claims that have not been amended herein are shown in small print.

Please cancel claims 8, 16-17 and 34-35 without prejudice and amend claims 18, 25-29, 31, 33, and 36 as follows.

1. (Allowed) A computer implemented method for calculating an importance rank for N linked nodes of a linked database, the method comprising the steps of:
 - (a) selecting an initial N-dimensional vector p_0 wherein each component of p_0 represents a probability that a user will arrive at a given node after a large number of forward links, wherein each node of the N linked nodes is a computer-readable document containing information;
 - (b) computing an approximation p_n to a steady-state probability p_∞ , wherein each component of p_∞ represents a probability that the user will randomly end up a given node after a large number of forward links, in accordance with the equation $p_n = A^n p_0$, where A is an NxN transition probability matrix having elements $A[i][j]$ representing a probability of moving from node i to node j; and
 - (c) determining a rank $r[k]$ for node k from a k^{th} component of p_n , wherein $r[k]$ represents an importance of the information contained in node k.
2. (Allowed) The method of claim 1 wherein the matrix A is chosen so that an importance rank of a node is calculated, in part, from a weighted sum of importance ranks of backlink nodes of the node.
3. (Allowed) The method of claim 2 wherein the importance ranks of each of the backlink nodes is weighted in dependence upon the total number of links in the backlink node.
4. (Allowed) The method of claim 1 wherein the matrix A is chosen so that an importance rank of a node is calculated, in part, from a constant α representing the probability that a surfer will randomly jump to the node.

5. (Allowed) The method of claim 1 wherein the matrix A is chosen so that an importance rank of a node is calculated, in part, from a measure of distances between the node and backlink nodes of the node.

6. (Allowed) The method of claim 1 wherein the initial N -dimensional vector p_0 is selected to represent a uniform probability distribution.

7. (Allowed) The method of claim 1 wherein the initial N -dimensional vector p_0 is selected to represent a non-uniform probability distribution, wherein a predetermined set of nodes is given a relatively large initial probability.

8. (Canceled)

9. (Allowed) A computer implemented method for calculating an importance rank for each of N linked web page documents, the method comprising the steps of:

(a) selecting an initial N -dimensional vector p_0 wherein each component of p_0 represents an initial estimate of a probability that a user arrive at a given web page document after a large number of forward links;

(b) computing an approximation p_n to a steady-state probability p_∞ , wherein each component of p_∞ represents an improved estimate of a probability that the user will randomly at a given web page document, in accordance with the equation $p_n = A^n p_0$, where A is an $N \times N$ transition probability matrix having elements $A[i][j]$ representing a probability of moving from web page document i to web page document j , and

(c) determining a rank $r[k]$ for a web page document k from a k^{th} component of p_n , wherein $r[k]$ represents an importance of the information contained in a particular web page document k .

10. (Allowed) The method of claim 9 wherein the matrix a is chosen so that an importance rank of a given web page document is calculated, in part, from a weighted sum of importance ranks of web page documents backlinked to the given web page document.

11. (Allowed) The method of claim 10 wherein the importance ranks of each of the backlinked web page documents is weighted in dependence upon the total number of links in the backlinked web page document.

12. (Allowed) The method of claim 9 wherein the matrix A is chosen so that an importance rank of a web page document is calculated, in part, from a constant α representing the probability that a surfer will randomly jump to the web page document.

13. (Allowed) The method of claim 9 wherein the matrix A is chosen so that an importance rank of a web page document is calculated, in part, from a measure of distances between the web page document and backlink nodes of the web page document.



14. (Allowed) The method of claim 9 wherein the initial N-dimensional vector p_0 is selected to represent a uniform probability distribution.

15. (Allowed) The method of claim 9 wherein the initial N-dimensional vector p_0 is selected to represent a non-uniform probability distribution, wherein a predetermined set of web page documents is given a relatively large initial probability.

16-17. (Canceled)

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18. (Amended) A computer implemented method of ranking a plurality of linked documents, comprising: [The method of claim 16] obtaining a plurality of linked documents; for each linked document pointed to by a link in one or more of the plurality of linked documents, assigning a rank to the linked document that is dependent on ranks of the one or more of the plurality of linked documents, wherein each of the ranks of the one or more of the plurality of linked documents are adjusted by a weight; and processing the plurality of linked documents according to their rank.

19. The method of claim 18, wherein the weight is dependent on the number of links in the one or more of the plurality of linked documents.

20. The method of claim 18, wherein the weight is dependent on an estimation of a probability that a linked document will be accessed.

21. The method of claim 18, wherein the weight is dependent on the URL, host, domain, author, institution, or last update time of the one or more plurality of linked documents.

22. The method of claim 18, wherein the weight is dependent on whether the one or more plurality of linked documents are selected documents or roots.

23. The method of claim 18, wherein the weight is dependent on the importance, visibility or textual emphasis of the links in the plurality of linked documents.

24. The method of claim 18, wherein the weight is dependent on a particular user's preferences, the rate at which users access the one or more plurality of linked documents, or the importance of the one or more plurality of linked documents.

Sub D3

25. (Amended) A computer implemented method of ranking a plurality of linked documents, comprising: [The method of claim 16]
obtaining a plurality of linked documents;
for each linked document pointed to by a link in one or more of the plurality of linked documents, assigning a rank to the linked document that is dependent on ranks of the one or more of the plurality of linked documents; and
processing the plurality of linked documents according to their rank, wherein the processing includes displaying links to the plurality of linked documents as results from a search.

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26. (Amended) A computer implemented method of ranking a plurality of linked documents, comprising: [The method of claim 16]
obtaining a plurality of linked documents;
for each linked document pointed to by a link in one or more of the plurality of linked documents, assigning a rank to the linked document that is dependent on ranks of the one or more of the plurality of linked documents; and
processing the plurality of linked documents according to their rank, wherein the processing includes crawling the plurality of linked documents.

27. (Amended) A computer implemented method of ranking a plurality of linked documents, comprising: [The method of claim 16]
obtaining a plurality of linked documents;
for each linked document pointed to by a link in one or more of the plurality of linked documents, assigning a rank to the linked document that is dependent on ranks of the one or more of the plurality of linked documents; and
processing the plurality of linked documents according to their rank, wherein the processing includes displaying links to the plurality of linked documents as a directory listing.

Sub D4

28. (Amended) A computer implemented method of ranking a plurality of linked documents, comprising: [The method of claim 16, further comprising:]
obtaining a plurality of linked documents;
generating an initial estimate of the rank of each of the one or more plurality of linked documents; [and]
updating the estimate of the rank for each of the one or more plurality of linked documents utilizing estimates of ranks for linked documents that include a link to the linked document;

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for each linked document pointed to by a link in one or more of the plurality of linked documents, assigning a rank to the linked document that is dependent on ranks of the one or more of the plurality of linked documents; and
processing the plurality of linked documents according to their rank.

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word.

29. (Amended) A computer implemented method of ranking a plurality of linked documents, comprising: [The method of claim 16]
obtaining a plurality of linked documents;
for each linked document pointed to by a link in one or more of the plurality of linked documents, assigning a rank to the linked document that is dependent on ranks of the one or more of the plurality of linked documents; and
processing the plurality of linked documents according to their rank, wherein the processing includes displaying links to the plurality of linked documents and annotations representing the relative importance or rank of each of the plurality of linked documents.

30. The method of claim 29, wherein the annotations are bars, icons or text.

B4

31. (Amended) A computer implemented method of ranking a plurality of linked documents, comprising: [The method of claim 16]
obtaining a plurality of linked documents;
for each linked document pointed to by a link in one or more of the plurality of linked documents, assigning a rank to the linked document that is dependent on ranks of the one or more of the plurality of linked documents; and
processing the plurality of linked documents according to their rank, wherein the plurality of linked documents are also processed according to textual matching.

32. The method of claim 31, wherein the textual matching includes anchor text associated with the links.

B5

33. (Amended) A computer implemented method of ranking a plurality of linked documents, comprising: [The method of claim 16]
obtaining a plurality of linked documents;
for each linked document pointed to by a link in one or more of the plurality of linked documents, assigning a rank to the linked document that is dependent on ranks of the one or more of the plurality of linked documents; and

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processing the plurality of linked documents according to their rank, wherein the plurality of linked documents are also processed according to groupings of the plurality of linked documents.

34-35. (Canceled)

Sub E 4

36 (Amended) A computer implemented method of ranking a plurality of linked documents, comprising: [The method of claim 34]
performing a random traversal of a plurality of linked documents, wherein performing a random traversal includes selecting a random link to traverse in a current linked document;
for each linked document that is traversed, assigning a rank to the linked document that is dependent on the number of times the linked document has been traversed; and
processing the plurality of linked documents according to their rank.

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37. The method of claim 36, wherein there is a predetermined probability that the next linked document to be traversed will be a random one of the plurality of linked documents.

REMARKS

Claims 1-7, 9-15, 18-33, and 36-37 are pending in the application. In a sincere effort to expedite prosecution, Applicant canceled claims 8, 16-17 and 34-35 without disclaiming the subject matter therein. Applicant reserves all right to pursue these or other claims in a continuing application. In light of the amendments, Applicant believes all the pending claims are in condition for allowance.

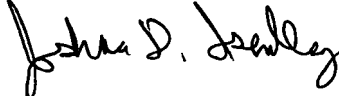
Claims 1-7 and 9-15 were allowed. Claims 18-33 and 36-37 were objected to as being depended upon a rejected base claim, but it was indicated that the claims would be allowed if rewritten in independent form including all the limitations of the base claim and any intervening claims. Applicant has amended these claims accordingly so the claims are allowable.

The drawings were objected to as allegedly not illustrating the claimed subject matter. Although Applicant disagrees with the objection, Applicant proposes adding Figure 3 and accompanying text that correspond to claim 1 of the application as originally filed. No new matter has been added as the subject matter was included in the application as originally filed.

For the foregoing reasons, Applicant believes all the pending claims are in condition for allowance and should be passed to issue. If the Examiner feels that a telephone conference would

in any way expedite the prosecution of the application, please do not hesitate to call the undersigned at (650) 462-6377.

Respectfully submitted,



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AFI GAW-2771

TRANSMITTAL FORM (for all correspondence after initial filing)	Attorney Docket No. S96-213	Total Pages
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	Filing Date 1/9/98	
	First Named Inventor LAWRENCE PAGE	
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SIGNATURE OF AGENT	
NAME	JOSHUA D. ISENBERG, REG. NO. 41,088
Signature	<i>Joshua D. Isenberg</i>
Date	<i>4/25/2000</i>

Certificate of Mailing by "Regular Mail"	
I hereby certify that this correspondence is being deposited on the date indicated below as first class mail with the U.S. Postal Service addressed to the ASSISTANT COMMISSIONER FOR PATENTS, WASHINGTON, DC 20231.	
<i>Joshua D. Isenberg</i> JOSHUA D. ISENBERG REG. NO. 41,088	DATE OF MAILING: <i>4/25/2000</i>

B



**UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

mt

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/004,827 01/09/98 PAGE

L S96-213

EXAMINER

LM12/0309

THOMAS J MCFARLANE
LUMEN INTELLECTUAL PROPERTY SERVICES
426 LOWELL AVENUE
PALO ALTO CA 94301

LE.U	
ART UNIT	PAPER NUMBER


2771
DATE MAILED:

//
03/09/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No. 09/004,827	Applicant(s)	Page
Examiner Uyen Le	Group Art Unit 2771	

Responsive to communication(s) filed on Dec 27, 1999

This action is **FINAL**.

Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

- Claim(s) 1-37 is/are pending in the application.
Of the above, claim(s) _____ is/are withdrawn from consideration.
- Claim(s) 1-7 and 9-15 is/are allowed.
- Claim(s) 8, 16, 17, 34, and 35 is/are rejected.
- Claim(s) 18-33, 36, 37 is/are objected to.
- Claims _____ are subject to restriction or election requirement.

Application Papers

- See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- The drawing(s) filed on Jan 9, 1998 is/are objected to by the Examiner.
- The proposed drawing correction, filed on _____ is approved disapproved.
- The specification is objected to by the Examiner.
- The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
 - All Some* None of the CERTIFIED copies of the priority documents have been received.
 - received in Application No. (Series Code/Serial Number) _____
 - received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- Notice of References Cited, PTO-892
- Information Disclosure Statement(s), PTO-1449, Paper No(s). 9
- Interview Summary, PTO-413
- Notice of Draftsperson's Patent Drawing Review, PTO-948
- Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

Art Unit: 2771

DETAILED ACTION

Answers to Arguments

1. Applicant's amendment to claims 1, 8 is acknowledged. Consequently, rejection to claims 1-8 under 35 U.S.C. 101 is withdrawn.
2. Applicant's arguments regarding claim 8 have been fully considered but they are not persuasive. Claim 8 merely reads on a recursive technique for node ranking well known in the art as admitted by applicant at page 3 of the specification. The prior art method of citation counting assigns a higher rank to a linked node if it has more backlinks compared to other nodes. Clearly, in a system of linked nodes, each backlink node in turn had been weighted in dependence upon the number of links in its backlink node. Note claim 8 does not require the backlink node to be assigned an importance other than the "weight" which in this case is interpreted as the number of nodes pointing to it.

Drawings

3. The drawings are objected to because they do not adequately illustrate the claimed subject matter. Note Figures 1-2 do not illustrate any claim.
Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Art Unit: 2771

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 8, 16, 17, 34, 35 are rejected under 35 U.S.C. 102(a) as being anticipated by applicant's admitted prior art at pages 3 and 12.

Claim 8 merely reads on a recursive technique for node ranking well known in the art as admitted by applicant at page 3 of the specification. The prior art method of citation counting assigns a higher rank to a linked node if it has more backlinks compared to other nodes. Clearly, in a system of linked nodes, each backlink node in turn had been weighted in dependence upon the number of links in its backlink node. Note claim 8 does not require the backlink node to be assigned an importance other than the "weight" which in this case is interpreted as the number of nodes pointing to it.

Claim 16 merely reads on the fact that the prior art assigns a rank to a document based on the degree to which the search terms match the anchor descriptions in its backlink documents (see page 3, lines 13-18). Clearly, the backlink documents and the ranked documents are linked and the documents are processed according to their ranks.

Regarding claim 17, clearly the rank assigned to a document is dependent on the sum of the ranks of the one or more of the plurality of linked documents since the backlink documents are involved in ranking a document.

Art Unit: 2771

Claim 34 merely reads on the well known fact admitted by the applicant at page 12, line 19 that users typically jump to a different place while surfing the web. Furthermore, the claimed steps of assigning a rank to the linked document dependent on the number of times the linked document has been traversed is met when the prior art citation counting method assigns a rank to a document according to the number of documents pointing to it (see page 3, lines 20-22). Clearly, the step of processing linked documents according to their rank had been performed in the prior art method since the whole purpose of ranking documents is for orderly processing them according to their rank.

Claim 35 merely reads on the fact that a linked document is accessed and assigned a rank through another linked document. Clearly, in the process, the rank assigned is also dependent on the number of linked documents that have been traversed.

Allowable Subject Matter

5. Claims 1-7, 9-15 are allowed.

The following is an examiner's statement of reasons for allowance: the prior art of record does not disclose or make obvious a computerized method for ranking documents represented as nodes including determining the rank of a node from a mathematical algorithm involving an initial N-dimensional vector wherein each component represents a probability that a user will arrive at a given node after a number of forward links and a NxN transition probability matrix wherein each element ij of the matrix represents a probability of moving from node i to node j ; or otherwise suggest its use together with all the limitations recited in claims 1 and 9.

Art Unit: 2771

All dependent claims 2-7, 10-15 being further limiting and definite are also allowable
Any comments considered necessary by applicant must be submitted no later than the
payment of the issue fee and, to avoid processing delays, should preferably accompany the
issue fee. Such submissions should be clearly labeled "Comments on Statement of
Reasons for Allowance."

6. Claims 18-33, 36, 37 are objected to as being dependent upon a rejected base
claim, but would be allowable if rewritten in independent form including all of the
limitations of the base claim and any intervening claims.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in
this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP §
706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR
1.136(a).

8. The prior art made of record and not relied upon is considered pertinent to
applicant's disclosures.

Inoue et al (US 6,014,678) teach an apparatus for preparing a hypertext document of
pieces of information having reference relationships with each other.

Art Unit: 2771

Craig Boyle "To link or not to link: an empirical comparison of Hypertext linking strategies", ACM 1992.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Uyen Le whose telephone number is (703) 305-4134. The examiner can be reached on Monday through Thursday from 7:00am to 5:30pm.

If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Thomas Black can be reached on (703)305-9707.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington D.C. 20231

or faxed to: (703)308-9051, (for formal communications intended for entry)

or: (703)308-5403 (for informal or draft communications, please label

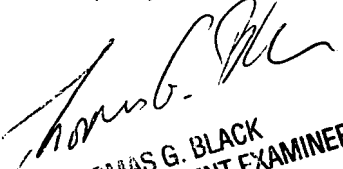
"PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone is (703)305-3900.

UL

03/01/00


THOMAS G. BLACK
SUPERVISORY PATENT EXAMINER
GROUP 2700

FORM PTO-892	U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	SERIAL NO. 09/004,827	GROUP ART UNIT 2771	ATTACHMENT TO PAPER NO. 12
NOTICE OF REFERENCES CITED		APPLICANT(S) Page		

U.S. PATENT DOCUMENTS

*	DOCUMENT NO.	DATE	NAME	CLASS	SUB-CLASS	FILING DATE
A	6,014,678	1/2000	Inoue et al		707	501
B						
C						
D						
E						
F						
G						
H						
I						
J						
K						

FOREIGN PATENT DOCUMENTS

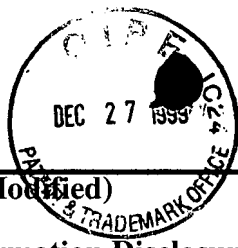
*	DOCUMENT NO.	DATE	COUNTRY	NAME	CLASS	SUB-CLASS
L						
M						
N						
O						
P						
Q						

OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)

R	Craig Boyle "To link or not to link: An empirical comparison of Hypertext linking strategies". ACM 1992, pages 221-231.
S	
T	
U	

EXAMINER Uyen Le	DATE March 1, 2000	Form892ccs2106b
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* A copy of this reference is not being furnished with this office action.
(See Manual of Patent Examining Procedure, section 707.05(a).)



Form 1449 (Modified) Information Disclosure Statement By Applicant (Use Several Sheets if Necessary)	Atty Docket No. S96-213 Application No.: 09/004,827 Inventor LAWRENECE PAGE Group 2772 Filing Date January 9, 1999
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Group 2700

U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
M	A	5,748,954	05/1998	Mauldin	395	610	06/1995

Foreign Patent or Published Foreign Patent Application

Examiner Initial	No.	Document No.	Publication Date	Country or Patent Office	Class	Sub-class	Translation	
							Yes	No
	B							

Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
M	C	L. Katz, "A new status index derived from sociometric analysis," 1953, Psychometrika, Vol. 18, pp. 39-43.
	D	C.H. Hubbell, "An input-output approach to clique identification sociometry," 1965, pp. 377-399.
	E	Mizruchi et al., "Techniques for disaggregating centrality scores in social networks," 1996, Sociological Methodology, pp. 26-48.
	F	E. Garfield, "Citation analysis as a tool in journal evaluation," 1972, Science, Vol. 178, pp. 471-479.
	G	Pinski et al., "Citation influence for journal aggregates of scientific publications: Theory, with application to the literature of physics," 1976, Inf. Proc. And Management, Vol. 12, pp. 297-312.
	H	N. Geller, "On the citation influence methodology of Pinski and Narin," 1978, Inf. Proc. And Management, Vol. 14, pp. 93-95.
	I	P. Doreian, "Measuring the relative standing of disciplinary journals," 1988, Inf. Proc. And Management, Vol. 24, pp. 45-56.
Examiner	UYEN LE	
Date Considered	29 Feb 00	

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.



Form 1449 (Modified) Information Disclosure Statement By Applicant (Use Several Sheets if Necessary)	Atty Docket No. S96-213 Application No.: 09/004,827 Inventor LAWRENECE PAGE Group 2772 Filing Date January 9, 1998
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U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date

Foreign Patent or Published Foreign Patent Application

Examiner Initial	No.	Document No.	Publication Date	Country or Patent Office	Class	Sub-class	Translation	
							Yes	No

Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
<i>W</i>	J	P. Doreian, "A measure of standing for citation networks within a wider environment," 1994, Inf. Proc. And Management, Vol. 30, pp. 21-31.
	K	Botafogo et al., "Structural analysis of hypertext: Identifying hierarchies and useful metrics," 1992, ACM Trans. Inc. Systems, Vol. 10, pp. 142-180.
	L	Mark E. Frisse, "Searching for information in a hypertext medical handbook," 1988, Communications of the ACM, Vol. 31, No. 7, pp. 880-886.
	M	Massimo Marchiori, "The quest for correct information on the Web: Hyper search engines," 1997, Computer Networks and ISDN Systems, Vol. 29, No. 8-13, pp. 1225-1235.
	N	Oliver A. McBryan, "GENVL and WWW: Tools for taming the web," 1994, Proceedings of the first International World Wide Web Conference, pp. 1-13.
	O	Carriere et al., "WebQuery: Searching and visualizing the web through connectivity," 1997, Proc. 6 th International World Wide Web Conference, pp. 1-14.
Examiner	<i>UYEN WE</i>	Date Considered <i>29 Feb 00</i>

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.



Form 1449 (Modified) Information Disclosure Statement By Applicant (Use Several Sheets if Necessary)	Atty Docket No. S96-213 Application No.: 09/004,827 Inventor LAWRENECE PAGE Group 2772 Filing Date January 9, 1999
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 Group 2700

U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date

Foreign Patent or Published Foreign Patent Application

Examiner Initial	No.	Document No.	Publication Date	Country or Patent Office	Class	Sub-class	Translation	
							Yes	No

Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
M	P	Arocena et al., "Applications of a web query language," 1997, Computer Networks and ISDN Systems, Vol. 29, No. 8-13, pp. 1305-1316.
↓	Q	Jon M. Kleinberg, "Authoritative sources in a hyperlinked environment," 1998, Proc. Of the 9 th Annual ACM-SIAM Symposium on Discrete Algorithms, pp. 668-677.
↓	R	Henzinger et al., "Measuring index quality using random walks on the web", 1999, Proc. of the 8 th International World Wide Web Conference, pp. 213-225.
Examiner	UYEN LE	
Date Considered	29 Feb 00	

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

	Type	L #	Hits	Search Text	DBs	Time Stamp	Comments	Error Definition	Errors
1	BRS	L2	4	backlink?	USPAT	2000/02/29 16:37			0
2	BRS	L5	6	3 and random	USPAT	2000/02/29 16:38			0
3	BRS	L6	27	node adj rank\$	USPAT	2000/02/29 17:31			0
4	BRS	L7	107	(NODE near3 RANK\$)	USPAT	2000/02/29 17:31			0
5	BRS	L9	3	7 same importance	USPAT	2000/02/29 17:33			0
6	BRS	L11	4	(7 SAME IMPORTANT)	USPAT	2000/02/29 17:33			0

Interview Summary

Application No.
09/004,827

Applicant(s)
Page

Examiner
Uyen Le

Group Art Unit
2771



All participants (applicant, applicant's representative, PTO personnel):

- (1) Uyen Le (3) Michael Ritter (Reg. No. 36,653)
(2) Wayne Amsbury (4) _____

Date of Interview Feb 29, 2000

Type: Telephonic Personal (copy is given to applicant applicant's representative).

Exhibit shown or demonstration conducted: Yes No. If yes, brief description:

Agreement was reached. was not reached.

Claim(s) discussed: 1, 16, and 34

Identification of prior art discussed:

Klinberg reference and the Clever Project were discussed as well as the inadequacy of the drawings.

Description of the general nature of what was agreed to if an agreement was reached, or any other comments:

Further consideration will be given to the amended claims and newly added claims in light of clarification by applicant's representative regarding "large number of forward links" in claim 1 and "random traversal" in claim 34.

(A fuller description, if necessary, and a copy of the amendments, if available, which the examiner agreed would render the claims allowable must be attached. Also, where no copy of the amendments which would render the claims allowable is available, a summary thereof must be attached.)

1. It is not necessary for applicant to provide a separate record of the substance of the interview.

Unless the paragraph above has been checked to indicate to the contrary, A FORMAL WRITTEN RESPONSE TO THE LAST OFFICE ACTION IS NOT WAIVED AND MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a response to the last Office action has already been filed, APPLICANT IS GIVEN ONE MONTH FROM THIS INTERVIEW DATE TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW.

2. Since the Examiner's interview summary above (including any attachments) reflects a complete response to each of the objections, rejections and requirements that may be present in the last Office action, and since the claims are now allowable, this completed form is considered to fulfill the response requirements of the last Office action. Applicant is not relieved from providing a separate record of the interview unless box 1 above is also checked.

Examiner Note: You must sign and stamp this form unless it is an attachment to a signed Office action.

OFFICIAL

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: LAWRENCE PAGE)
)
 Application No. 09/004,827)
)
 Filed: January 9, 1998)
)
 For: METHOD FOR NODE RANKING IN A LINKED)
 DATABASE)

Examiner: U. Le
 Attorney Docket No. S96-213
 Art Unit: 2771

Richard
4/6/00
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2/2/99
PA
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5/11

APPOINTMENT OF ASSOCIATE ATTORNEY

Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

As attorney of record, I hereby appoint Michael J. Ritter, Reg. No. 36,653, as associate attorney to prosecute the above-identified application. Please continue to direct all correspondence to:

Thomas J. McFarlane
 426 Lowell Ave.
 Palo Alto, CA 94301-3813
 TEL: (650) 321-6630
 FAX: (650) 321-1621

Respectfully submitted,



Thomas J. McFarlane
 Registration No. 39,299

FACSIMILE COVER SHEET

RITTER, VAN PELT & YI LLP

4906 El Camino Real

Suite 205

Los Altos, California 94022

Tel: 650-903-3500

Fax: 650-903-3501

Date: February 28, 2000

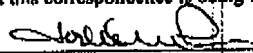
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Signed: _____



Jodie Price

Sender: Michael J. Ritter
Re: United States Patent Application No. 09/004,827
Docket No: GOOGG102
Pages: 2 (to include cover)

Company: United States Patent and Trademark Office
Group: 2771
FAX #: (703) 308-9051

FACSIMILE COVER SHEET

RITTER, VAN PELT & YI LLP

4906 El Camino Real
Suite 205

Los Altos, California 94022

Tel: 650-903-3500

Fax: 650-903-3501

Date: February 28, 2000

COPY

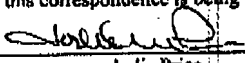
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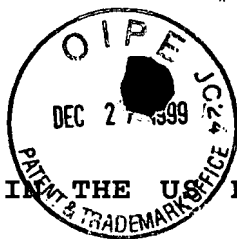
Signed:



Jodie Price

Sender: Michael J. Ritter
Re: United States Patent Application No. 09/004,827
Docket No: GOOGG102
Pages: 2 (to include cover)

Company: United States Patent and Trademark Office
Group: 2771
FAX #: (703) 308-9051



IN THE U.S. PATENT AND TRADEMARK OFFICE

#8/a
L. Tyson
91-86-00
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Group 2700

Application Number: 09/004,827
Filing Date: 1/09/98
5 Applicant: Lawrence Page
Application Title: Method for Node Ranking in a Linked Database
Examiner: Uyen Le
Art Unit: 2771

10 I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, DC 20231, on

15 *Joshua D. Isenberg*

Joshua D. Isenberg, Reg. No. 41,088

12/21/99

date

12/21/99

date of deposit

AMENDMENT

25 Commissioner of Patents and Trademarks
Washington, DC 20231

Sir:

30 In response to the complete Office Letter mailed August 26, 1999, kindly amend the above application as follows:

IN THE CLAIMS:

35 Amend the claims of record 1 and 8, as follows:

1 1. (AMENDED) A computer implemented method for calculating an
2 importance rank for N linked nodes of a linked database,
3 the method comprising the steps of:

4
5 (a) selecting an initial N-dimensional vector p_0 wherein each
6 component of p_0 represents a probability that a user will
7 arrive at a given node after a large number of forward

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8 links, wherein each node of the N linked nodes is a
9 computer-readable document containing information;
10 (b) computing an approximation p_n to a steady-state probability
11 p_∞ , wherein each component of p_∞ represents a probability
12 that the user will randomly end up a given node after a
13 large number of forward links, in accordance with the
14 equation $p_n = A^n p_0$, where A is an NxN transition
15 probability matrix having elements $A[i][j]$ representing a
16 probability of moving from node i to node j; and
17 (c) determining a rank $r[k]$ for a node k from a k^{th} component of
18 p_n , wherein $r[k]$ represents an importance of the
19 information contained in node k.

20

1 8. (AMENDED) A computer implemented method for assigning a
2 rank to N nodes of a linked database stored in a computer-
3 readable medium, wherein each node contains computer-readable
4 information, the method comprising calculating, for a node, a
5 weighted sum of ranks of backlink nodes to the node, wherein
6 each of the backlink nodes is weighted in dependence upon the
7 total number of links in the backlink node, wherein the rank
8 assigned to a given node represents an importance to a user
9 of the information contained in the node.

10

1 Kindly add the following new claims:

1 --9. (NEW) A computer implemented method for calculating an
2 importance rank for each of N linked web page documents, the
3 method comprising the steps of:

4
5 (a) selecting an initial N-dimensional vector \mathbf{p}_0 wherein each
6 component of \mathbf{p}_0 represents an initial estimate of a
7 probability that a user arrive at a given web page document
8 after a large number of forward links;

9 (b) computing an approximation \mathbf{p}_n to a steady-state probability
10 \mathbf{p}_∞ , wherein each component of \mathbf{p}_∞ represents an improved
11 estimate of a probability that the user will randomly at a
12 given web page document, in accordance with the equation \mathbf{p}_n
13 = $\mathbf{A}^n \mathbf{p}_0$, where \mathbf{A} is an NxN transition probability matrix
14 having elements $\mathbf{A}[i][j]$ representing a probability of
15 moving from web page document i to web page document j; and
16 (c) determining a rank $r[k]$ for a web page document k from a k^{th}
17 component of \mathbf{p}_n , wherein $r[k]$ represents an importance of
18 the information contained in a particular web page document
19 k.

1 10. (NEW) The method of claim 9 wherein the matrix \mathbf{A} is chosen
2 so that an importance rank of a given web page document is
3 calculated, in part, from a weighted sum of importance
4 ranks of web page documents backlinked to the given web
5 page document.

1 11. (NEW) The method of claim 10 wherein the importance ranks
2 of each of the backlinked web page documents is weighted in
3 dependence upon the total number of links in the backlinked
4 web page document.

1 12. (NEW) The method of claim 9 wherein the matrix **A** is chosen
2 so that an importance rank of a web page document is
3 calculated, in part, from a constant α representing the
4 probability that a surfer will randomly jump to the web
5 page document.

A3
cont. 1 13. (NEW) The method of claim 9 wherein the matrix **A** is chosen
2 so that an importance rank of a web page document is
3 calculated, in part, from a measure of distances between
4 the web page document and backlink nodes of the web page
5 document.

1 14. (NEW) The method of claim 9 wherein the initial N-
2 dimensional vector \mathbf{p}_0 is selected to represent a uniform
3 probability distribution.

1 15. (NEW) The method of claim 9 wherein the initial N-
2 dimensional vector \mathbf{p}_0 is selected to represent a non-
3 uniform probability distribution, wherein a predetermined
4 set of web page documents is given a relatively large
5 initial probability.

1 16. (NEW) A computer implemented method of ranking a
2 plurality of linked documents, comprising:

- 3 obtaining a plurality of linked documents;
- 4 for each linked document pointed to by a link in one or
- 5 more of the plurality of linked documents, assigning a rank
- 6 to the linked document that is dependent on ranks of the one
- 7 or more of the plurality of linked documents; and
- 8 processing the linked documents according to their rank.

a3 cont.

1 17. (NEW) The method of claim 16, wherein the rank
2 assigned to the linked document is dependent on the sum of the
3 ranks of the one or more of the plurality of linked documents.

sub 18

1 18. (NEW) The method of claim 16, wherein each of the
2 ranks of the one or more of the plurality of linked documents
3 are adjusted by a weight.

sub 19

1 19. (NEW) The method of claim 18, wherein the weight is
2 dependent on the number of links in the one or more of the
3 plurality of linked documents.

1 20. (NEW) The method of claim 18, wherein the weight is
2 dependent on an estimation of a probability that a linked
3 document will be accessed.

1 21. (NEW) The method of claim 18, wherein the weight is
2 dependent on the URL, host, domain, author, institution, or

A

3 last update time of the one or more plurality of linked
4 documents.

1 22. (NEW) The method of claim 18, wherein the weight is
2 dependent on whether the one or more plurality of linked
3 documents are selected documents or roots.

1 23. (NEW) The method of claim 18, wherein the weight is
2 dependent on the importance, visibility or textual emphasis of
3 the links in the one or more of the plurality of linked
4 documents.

*A3
cont.*

1 24. (NEW) The method of claim 18, wherein the weight is
2 dependent on a particular user's preferences, the rate at which
3 users access the one or more plurality of linked documents, or
4 the importance of the one or more plurality of linked documents.

bubB3

1 25. (NEW) The method of claim 16, wherein the processing
2 includes displaying links to the linked documents as results
3 from a search.

1 26. (NEW) The method of claim 16, wherein the processing
2 includes crawling the linked documents.

1 27. (NEW) The method of claim 16, wherein the processing
2 includes displaying links to the linked documents as a directory
3 listing.

A

1 28. (NEW) The method of claim 16, further comprising:
2 generating an initial estimate of the rank of each of the
3 one or more plurality of linked documents; and
4 updating the estimate of the rank for each of the one or
5 more plurality of linked documents utilizing estimates of ranks
6 for linked documents that include a link to the linked document.

1 29. (NEW) The method of claim 16, wherein the processing
2 includes displaying links to the linked documents and
3 annotations representing the relative importance or rank of each
4 of the linked documents.

A3
cont.

1 30. (NEW) The method of claim 29, wherein the annotations
2 are bars, icons or text.

1 *sub B* 31. (NEW) The method of claim 16, wherein the linked
2 documents are also processed according to textual matching.

1 32. (NEW) The method of claim 31, wherein the textual
2 matching includes anchor text associated with the links.

1 *sub B* 33. (NEW) The method of claim 16, wherein the linked
2 documents are also processed according to groupings of the
3 linked documents.

X

1 34. (NEW) A computer implemented method of ranking a
2 plurality of linked documents, comprising:
3 performing a random traversal of a plurality of linked
4 documents;
5 for each linked document that is traversed, assigning a
6 rank to the linked document that is dependent, on the number of
7 times the linked document has been traversed; and
8 processing the plurality of linked documents according to
9 their rank.

1 35. (NEW) The method of claim 34, wherein the rank is also
2 dependent on the number of linked documents that have been
3 traversed.

1 36. (NEW) The method of claim 34, wherein performing a
2 random traversal includes selecting a random link according to a
3 distribution to traverse in a current linked document.

1 37. (NEW) The method of claim ¹¹36, wherein there is a
2 predetermined probability that the next linked document
3 to be traversed will be a random one according to a
4 distribution of the plurality of linked documents.--

REMARKS:

To expedite prosecution, applicants have voluntarily amended claims 1 and 8 to more distinctly identify the invention in terms of a ranking of computer retrievable information. This change is fully supported by the specification at page 6, lines 30-34. As such, no new matter is being entered with these amendments. The amendments unambiguously place the claimed subject matter in a statutory category and bring out the salient differences between the invention and the prior art cited by the Examiner.

Claim rejections

35 U.S.C. §101

The Examiner has rejected claims 1-8 under 35 U.S.C. §101 as being directed to a non-statutory subject matter. The Examiner argues that claim 1 merely recites a computer implemented method processing a mathematical algorithm for determining the rank of a node without any practical application.

Claims 1 and 8 have been amended recite that each node represents a computer-readable document containing information (emphasis added). Furthermore, the probabilities p_0 and p_∞ are described as being estimates of steady state probabilities that a computer user will arrive at nodes after a large number of forward links.

A

The requirements for statutory subject matter are set forth in the MPEP at § 2106 at page 2100-16. To summarize the law, MPEP at § 2106 states, inter alia, that "[f]or subject matter
5 to be statutory, the claimed process must be limited to a practical application of the abstract idea or mathematical algorithm in the technological arts." (See Alappat, 33 F.3d at 1543, 31 USPQ 2d at 1556-57) Such is clearly the case with claims **1** and **8** as they presently stand in the
10 application. Claims **1** and **8** are clearly directed to the practical task of calculating an importance rank for N linked nodes of a linked database. As amended, the practical application recited in claims **1** and **8** is the ranking of computer-readable information.

15

35 U.S.C. § 103

The Examiner rejected claims **1-8** under 35 U.S.C. 103(a) as being unpatentable over Gansner et al. (U.S. Patent 4,953,106, issued August 28, 1990).

20

In rejecting the claims, the Examiner states that Gansner uses a computer method for drawing directed graphs providing reduced crossings. The Examiner argues that, although Gansner does not specifically use the algorithm recited in
25 the claims, Gansner discloses node ranking to distinguish between nodes of the same rank. The Examiner further argues that the equation in claim **1** is merely a mathematical formula

with no patentability weight. As such, the Examiner concludes that it would have been obvious to use any appropriate algorithm to rank nodes as taught by Gansner depending on design requirements and choice.

5

As discussed above with respect to the rejection under 35 U.S.C. 101, the applicants maintain that claims 1 and 8 recite calculating an importance rank for N linked nodes of a linked database with respect to a ranking of computer-
10 readable information. Gansner, by contrast, teaches a computer method for drawing directed graphs. Gansner teaches a technique for drawing directed graphs having reduced crossings and improved picture quality (see abstract). Gansner neither teaches nor suggests ranking N linked nodes
15 from a linked database containing computer-readable information as recited in claims 1 and 8. Furthermore, in view of the applicants' amendments, claim 1 presently recites statutory subject matter. The equations recited in claim 1 are a part of that statutory subject matter in that the
20 equations are used to accomplish a practical task. Consequently, the equations in claim 1 are entitled to patentable weight.

By the Examiner's own admission, Gansner does not
25 specifically use the algorithm claimed to rank the nodes. Furthermore, the Examiner neither states nor suggests that the claimed algorithm would have been obvious to one of

ordinary skill in the art. As such, a prima facie case of obviousness has not been established since Gansner disclose or suggest all the limitations of claim 1. Therefore, claim 1 should be passed to issue.

5

With respect to claim 8, the Examiner has not pointed to any teaching or suggestion in the prior art that each of the backlink nodes be weighted depending upon the total number of links in the backlink node. Gansner does not teach or suggest
10 all the limitations of claim 8 and, therefore, a prima facie case of obviousness has not been established. As such, applicants submit that claim 8, as it presently stands in the application should be passed to issue.

15 Furthermore, the applicants submit that claims 2-7 depend from claim 1 and recite additional features therefor. As such and for at least the reasons stated hereinabove, the applicants submit that these dependent claims are allowable over the cited art.

20

CONCLUSION

In view of the foregoing arguments, the applicants submit that claims 1-37 are allowable. The applicants kindly
25 request reconsideration of the application and that the Examiner point out the allowable subject matter in the next Office Action.

Respectfully submitted,

Joshua D. Isenberg

5 Joshua D. Isenberg
Reg. No. 41,088
Patent Agent

10 Lumen
426 Lowell Ave.
Palo Alto, CA 94301
tel.: (650) 321-6630

A



RECEIVED
JAN 4 - 2000
Group 2700

#9
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: LAWRENCE PAGE
Application No.: 09/004,827
Filed: January 9, 1998
For: METHOD FOR NODE RANKING IN
A LINKED DATABASE

Atty. Docket No.: S96-213
Examiner: Uyen Le
Group: 2771
Date: December 17, 1999

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, DC 20231 on 12/21/99.

Signed: Joshua D. Isenberg

INFORMATION DISCLOSURE STATEMENT
UNDER 37 CFR §§1.56 AND 1.97(c)

Assistant Commissioner for Patents
Washington, DC 20231

Dear Sir:

The references listed in the attached PTO Form 1449, copies of which are attached, may be material to examination of the above-identified patent application. Applicants submit these references in compliance with their duty of disclosure pursuant to 37 CFR §§1.56 and 1.97. The Examiner is requested to make these references of official record in this application.

This Information Disclosure Statement is not to be construed as a representation that a search has been made, that additional information material to the examination of this application does not exist, or that these references indeed constitute prior art.

Enclosed is a check in the amount of \$526.00 which includes \$240.00 for fees associated with this action.

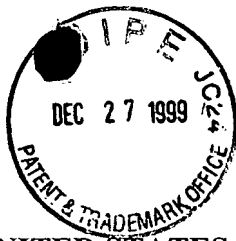
Respectfully submitted,

Joshua D. Isenberg

Joshua D. Isenberg
Registration No. 41,088

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JAN 4 - 2009
Group 2700

LUMEN
426 Lowell Ave.
Palo Alto, CA 94301
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#7
RECEIVED
JAN 4 - 2000
Group 2700

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application Number: 09/004,827
Filing Date: 1/9/98
Applicants: Lawrence Page
Application Title: Method for Node ranking in a Linked Database
Examiner: U. Le
Art Unit: 2771

Mailed 21 DEC 99
Palo Alto, CA

**PETITION FOR EXTENSION OF TIME
(Rules 136 and 17(a)-(d))**

Outstanding Office Action Mailed **8/26/99**
Original Period for Response Expired **11/26/99**
Request for Extension of **1** Month(s) to **12/26/99**
Sml. Ent. Petn. Fee Enc.: **\$55.00 (1 month)**

Commissioner of Patents and Trademarks
Washington, DC 20231

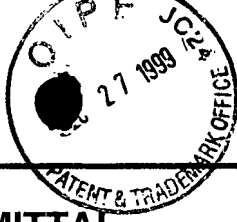
Sir:

In the above application, applicants respectfully petition that the period for response to the outstanding Office Action indicated above be extended for the additional month(s) also indicated above. A response to such Office Action and the above Petition Fee (Small Entity) are enclosed herewith. (This extension will not extend the time over the statutory period of six months from the date of the Office Action.)

Very respectfully,
Joshua D. Isenberg

Joshua D. Isenberg
Reg. No. 41,088
426 Lowell Avenue
Palo Alto, CA 94301
tel: (650) 321-6630

CAU 2776/8



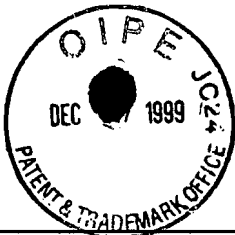
TRANSMITTAL FORM (for all correspondence after initial filing)	Attorney Docket No. S96-213	Total Pages
	Application Number 09/004,827	
	Filing Date 1/9/98	
	First Named Inventor LAWRENCE PAGE	
	Group Art Unit 2771	
	Examiner LE, U	

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JAN 4 - 2000
Group 2700

ENCLOSURES (check all that apply)	
<input checked="" type="checkbox"/> Return Receipt Postcard (MPEP 503)	<input type="checkbox"/> Response to Notice of Missing Parts
<input checked="" type="checkbox"/> Fee Transmittal Form	<input type="checkbox"/> Small Entity Statement
<input checked="" type="checkbox"/> Fee Attached	<input type="checkbox"/> Declaration by Inventors
<input checked="" type="checkbox"/> Response/Amendment	<input type="checkbox"/> Assignment papers
<input type="checkbox"/> After Final Rejection	<input type="checkbox"/> Power of Attorney by Assignee
<input type="checkbox"/> After Allowance communication to Group	<input checked="" type="checkbox"/> IDS/PTO-1449
<input type="checkbox"/> with Corrected Drawing(s) Total Sheets: []	<input checked="" type="checkbox"/> with copies of cited references
<input type="checkbox"/> with Affidavits/Declarations	<input type="checkbox"/> New Power of Attorney and Revocation of Old
<input checked="" type="checkbox"/> Extension of Time Request	<input type="checkbox"/> Change of Correspondence Address
<input type="checkbox"/> Express Abandonment Request	<input type="checkbox"/> Other:

SIGNATURE OF AGENT	
NAME	JOSHUA D. ISENBERG, REG. NO. 41,088
Signature	<i>Joshua D. Isenberg</i>
Date	

Certificate of Mailing by "Regular Mail"	
I hereby certify that this correspondence is being deposited on the date indicated below as first class mail with the U.S. Postal Service addressed to the ASSISTANT COMMISSIONER FOR PATENTS, WASHINGTON, DC 20231.	
<i>Joshua D. Isenberg</i>	DATE OF MAILING: <i>21 Dec 99</i>
JOSHUA D. ISENBERG REG. NO. 41,088	



FEE TRANSMITTAL

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NOV 4 - 2000
Group 2700
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Group 2700

Application Number:	09/004,827
Filing Date:	1/9/98
First Named Inventor:	Lawrence Page
Title of Invention:	Method for Node Ranking in a Linked Database
Group Art Unit:	2771
Examiner:	Le, U
Attorney Docket No.:	S96-213

Fee Calculation:		
for <input type="checkbox"/> Large Entity / <input checked="" type="checkbox"/> Small Entity.		
Basic Billing Fee:		
<input type="checkbox"/> Utility Patent Application:	\$760 / \$380	\$
<input type="checkbox"/> Provisional Patent Application:	\$150 / \$75	\$
Claims:		
<input checked="" type="checkbox"/> Number of Total Claims Over 20: [17]	x \$18 / \$9 =	\$ 153
<input checked="" type="checkbox"/> No. of Independent Claims Over 3: [2]	x \$78 / \$39 =	\$ 78
Other Fees:		
<input checked="" type="checkbox"/> Extension of time, 1 month	\$110 / \$55	\$ 55
<input type="checkbox"/> Extension of time, 2 months	\$380 / \$190	\$
<input type="checkbox"/> Extension of time, 3 months	\$870 / \$435	\$
<input type="checkbox"/> Extension of time, 4 months	\$1360 / \$680	\$
<input type="checkbox"/> Missing Parts Surcharge (Regular Application)	\$130 / \$65	\$
<input type="checkbox"/> Missing Parts Surcharge (Provisional Application)	\$50 / \$25	\$
<input type="checkbox"/> Recordation of Assignment Document	\$40	\$
<input type="checkbox"/> Issue Fee	\$1210 / \$605	\$
<input type="checkbox"/> Printed Patent; Number of Copies: []	x \$3 =	\$
<input checked="" type="checkbox"/> IDS	\$240	\$ 240
TOTAL PAYMENT:		\$ 526

Method of Payment:
<input checked="" type="checkbox"/> Payment Enclosed
<input checked="" type="checkbox"/> Check

Signature of Applicant, Attorney, or Agent

Joshua D. Isenberg Date 12/21/99

Joshua D. Isenberg, Reg. No. 41,088



**UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

10

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/004,827	01/09/98	PAGE	L 596-213
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LM02/0826

THOMAS J MCFARLANE
LUMEN INTELLECTUAL PROPERTY SERVICES
426 LOWELL AVENUE
PALO ALTO CA 94301

EXAMINER

LE, U

ART UNIT	PAPER NUMBER
----------	--------------

2771

6


DATE MAILED: 08/26/99

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No. 09/004,827	Applicant(s) Page
Examiner Uyen Le	Group Art Unit 2771



Responsive to communication(s) filed on _____

This action is **FINAL**.

Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

Claim(s) 1-8 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

Claim(s) _____ is/are allowed.

Claim(s) 1-8 is/are rejected.

Claim(s) _____ is/are objected to.

Claims _____ are subject to restriction or election requirement.

Application Papers

See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

The drawing(s) filed on _____ is/are objected to by the Examiner.

The proposed drawing correction, filed on _____ is approved disapproved.

The specification is objected to by the Examiner.

The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

All Some* None of the CERTIFIED copies of the priority documents have been
 received.

received in Application No. (Series Code/Serial Number) _____

received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

Notice of References Cited, PTO-892

Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

Interview Summary, PTO-413

Notice of Draftsperson's Patent Drawing Review, PTO-948

Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

Art Unit: 2771

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. Claims 1-8 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 1 merely recites a computer implemented method processing a mathematical algorithm for determining the rank of a node without any practical application.

The art rejection of claims 1-8 is applied as best understood in light of the rejection under 35 USC 101 above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gansner et al (US Patent 4,953,106).

Regarding claim 1, the claimed method of node ranking is disclosed by Gansner when Gansner uses a computer implemented method for drawing directed graphs providing reduced crossings. Although Gansner does not specifically use the algorithm claimed to rank nodes, Gansner discloses node ranking for distinguishing nodes belonging to the same rank (see the abstract). The equation cited in claim 1 is merely a mathematical descriptive formula resulting in a pure numerical solution with no patentability weight.

Art Unit: 2771

Therefore, it would have been obvious to one of ordinary skill in the art to use any appropriate algorithm to rank nodes in the method taught by Gansner depending on design requirements and choice.

Claims 2, 3 merely read on the fact that a recursive technique for ranking nodes is taken into consideration for the choice of the probability matrix used in the claimed equation.

Also note that the concept of the weighted sum is well known in the art for node ranking as shown by Gansner (see the abstract).

Claim 4 reciting the use of a constant representing the probability that a surfer will randomly jump to the node and claim 5 reciting the use of a distance between the node and backlink nodes are merely well known techniques for node ranking.

Claims 6, 7 recite selecting an initial vector which represents a uniform or non-uniform probability distribution are again a matter of design preference depending on how homogeneous a database is.

Claim 8 merely reads on a recursive technique for node ranking well known in the art as admitted by applicant at page 3 of the specification where a node is more heavily weighted if it has more backlinks compared to other nodes.

Art Unit: 2771

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosures.

North (US Patent 5,450,535) teaches graphs employing clusters.

Cohen (US Patent 5,752,241) teaches a method and apparatus for estimating transitive closure and reachability.

Carriere et al, "Web Query: Searching and Visualizing the Web through Connectivity", Computer Networks and ISDN Systems, 1997.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Uyen Le whose telephone number is (703) 305-4134.

The examiner can be reached on Monday through Thursday from 7:00am to 4:30pm.

The examiner can also be reached on alternate Fridays from 7:00am to 3:30pm.

If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Thomas Black can be reached on (703)305-9707.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington D.C. 20231

or faxed to:

(703)308-9051, (for formal communications intended for entry)

Art Unit: 2771

or:

(703)308-5403 (for informal or draft communications, please label

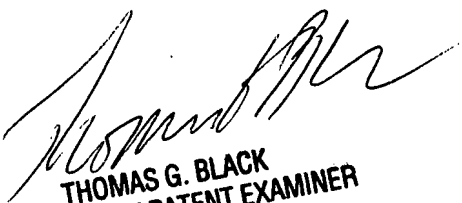
"PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,
Arlington, VA., Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or
proceeding should be directed to the Group receptionist whose telephone is (703)305-
3900.

UL

08/11/99


THOMAS G. BLACK
SUPERVISORY PATENT EXAMINER
GROUP 2700

FORM PTO-892	U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	SERIAL NO. 09/004,827	GROUP ART UNIT 2771	ATTACHMENT TO PAPER NO. 6
NOTICE OF REFERENCES CITED		APPLICANT(S)		
		Page		

U.S. PATENT DOCUMENTS

*		DOCUMENT NO.	DATE	NAME	CLASS	SUB-CLASS	FILING DATE
	A	4,953,106	8/1990	Gansner et al.	345	440	
	B	5,450,535	9/1995	North	395	140	
	C	5,752,241	5/1998	Cohen	707	3	
	D						
	E						
	F						
	G						
	H						
	I						
	J						
	K						

FOREIGN PATENT DOCUMENTS

*		DOCUMENT NO.	DATE	COUNTRY	NAME	CLASS	SUB-CLASS
	L						
	M						
	N						
	O						
	P						
	Q						

OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)

	R	S. Jeromy Carriere et al, "Web Query: Searching and Visualizing the Web through Connectivity", Computer Networks and ISDN Systems 29 (1997). pp 1257-1267.					
	S						
	T						
	U						

EXAMINER Uyen Le	DATE August 11, 1999	Form892ccs2106b
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* A copy of this reference is not being furnished with this office action.
(See Manual of Patent Examining Procedure, section 707.05(a).)

**NOTICE OF DRAFTPERSON'S
PATENT DRAWING REVIEW**

The drawing filed (insert date) _____ are:

A. not objected to by the Draftperson under 37 CFR 1.84 or 1.152.

B. objected to by the Draftperson under 37 CFR 1.84 or 1.152 as indicated below. The Examiner will require submission of new, corrected drawings where necessary. Corrected drawings must be submitted according to the instructions on the back of this notice.

- | | |
|--|--|
| <p>1. DRAWINGS. 37 CFR 1.84(a): Acceptable categories of drawings:
Black ink. Color.
_____ Color drawing are not acceptable until petition is granted.
Fig.(s) _____
_____ Pencil and non black ink is not permitted. Fig(s) _____</p> <p>2. PHOTOGRAPHS. 37 CFR 1.84(b)
_____ Photographs are not acceptable until petition is granted,
_____ 3 full-tone sets are required. Fig(s) _____
_____ Photographs not properly mounted (must bristol board or photographic double-weight paper). Fig(s) _____
_____ Poor quality (half-tone). Fig(s) _____</p> <p>3. TYPE OF PAPER. 37 CFR 1.84(e)
_____ Paper not flexible, strong, white and durable.
Fig.(s) _____
_____ Erasures, alterations, overwritings, interlineations, folds, copy machine marks not acceptable. (too thin)
_____ Mylar, vellum paper is not acceptable (too thin).
Fig(s) _____</p> <p>4. SIZE OF PAPER. 37 CFR 1.84(F): Acceptable sizes:
_____ 21.0 cm by 29.7 cm (DIN size A4)
_____ 21.6 cm by 27.9 cm (8 1/2 x 11 inches)
_____ All drawings sheets not the same size.
Sheet(s) _____</p> <p>5. MARGINS. 37 CFR 18.4(g): Acceptable margins:
Top 2.5 cm Left 2.5 cm Right 1.5 cm Bottom 1.0 cm
SIZE: A4 Size
Top 2.5 cm Left 2.5 cm Right 1.5 cm Bottom 1.0 cm
SIZE: 8 1/2 x 11
_____ Margins not acceptable. Fig(s) _____
_____ Top (T) _____ Left (L) _____
_____ Right (R) _____ Bottom (B) _____</p> <p>6. VIEWS. CFR 1.84(h)
REMINDER: Specification may require revision to correspond to drawing changes.
_____ Views connected by projection lines or lead lines.
Fig.(s) _____
Partial views. 37 CFR 1.84(h)(2)
_____ Brackets needed to show figure as one entity.
Fig.(s) _____
_____ Views not labeled separately or properly.
Fig.(s) _____
_____ Enlarged view not labeled separately or properly.
Fig.(s) _____</p> | <p>7. SECTIONAL VIEWS. 37 CFR 1.84(h)(3)
_____ Hatching not indicated for sectional portions of an object.
Fig.(s) _____
_____ Sectional designation should be noted with Arabic or Roman numbers. Fig.(s) _____</p> <p>8. ARRANGEMENT OF VIEWS. 37 CFR 1.84(i)
_____ Words do not appear on a horizontal, left-to-right fashion when page is either upright or turned, so that the top becomes the right side, except for graphs. Fig.(s) _____
_____ Views not on the same plane on drawing sheet. Fig.(s) _____</p> <p>9. SCALE. 37 CFR 1.84(k)
_____ Scale not large enough to show mechanism without crowding when drawing is reduced in size to two-thirds in reproduction.
Fig.(s) _____</p> <p>10. CHARACTER OF LINES, NUMBERS, & LETTERS. 37 CFR 1.84(l)
_____ Lines, numbers & letters not uniformly thick and well defined, clean, durable and black (poor line quality).
Fig.(s) _____</p> <p>11. SHADING. 37 CFR 1.84(m)
_____ Solid black areas pale. Fig.(s) _____
_____ Solid black shading not permitted. Fig.(s) _____
_____ Shade lines, pale, rough and blurred. Fig.(s) _____</p> <p>12. NUMBERS, LETTERS, & REFERENCE CHARACTERS. 37 CFR 1.48(p)
_____ Numbers and reference characters not plain and legible.
Fig.(s) _____
_____ Figure legends are poor. Fig.(s) _____
_____ Numbers and reference characters not oriented in the same direction as the view. 37 CFR 1.84(p)(3) Fig.(s) _____
_____ English alphabet not used. 37 CFR 1.84(p)(3) Fig.(s) _____
_____ Numbers, letters and reference characters must be at least .32 cm (1/8 inch) in height. 37 CFR 1.84(p)(3) Fig.(s) _____</p> <p>13. LEAD LINES. 37 CFR 1.84(q)
_____ Lead lines cross each other. Fig.(s) _____
_____ Lead lines missing. Fig.(s) _____</p> <p>14. NUMBERING OF SHEETS OF DRAWINGS. 37 CFR 1.48(t)
_____ Sheets not numbered consecutively, and in Arabic numerals beginning with number 1. Fig.(s) _____</p> <p>15. NUMBERING OF VIEWS. 37 CFR 1.84(u)
_____ Views not numbered consecutively, and in Arabic numerals, beginning with number 1. Fig.(s) _____</p> <p>16. CORRECTIONS. 37 CFR 1.84(w)
_____ Corrections not made from PTO-948 dated _____</p> <p>17. DESIGN DRAWINGS. 37 CFR 1.152
_____ Surface shading shown not appropriate. Fig.(s) _____
_____ Solid black shading not used for color contrast.
Fig.(s) _____</p> |
|--|--|

COMMENTS

REVIEWER _____

DATE 6/22/98

TELEPHONE NO. _____

ATTACHMENT TO PAPER NO. 6

PTO COPY

transitive closure and reachability; Edith Cohen, 707/3, 2, 4, 5 [IMAGE AVAILABLE]

2. 5,717,748, Feb. 10, 1998, Means and method for updating databases supporting local telephone number portability; Elbert Lee Sneed, Jr., et al., 379/207, 111, 219 [IMAGE AVAILABLE]

3. 5,634,055, May 27, 1997, Method for selecting assignments; John C. Barnewall, et al., 707/103; 705/9; 707/5, 6, 104 [IMAGE AVAILABLE]

4. 5,430,827, Jul. 4, 1995, Password verification system; Eugene L. Rissanen, 704/272, 246 [IMAGE AVAILABLE]

5. 5,148,370, Sep. 15, 1992, Expert system and method for batch production scheduling and planning; Maria Litt, et al., 364/468.1; 705/8; 706/904 [IMAGE AVAILABLE]

=> d his

(FILE 'USPAT' ENTERED AT 15:55:22 ON 12 JUL 1999)

```
L1          43 S LINKED DATABASE#
L2           1 S L1 (P) NODE#
L3           4 S RANK?(3A)NODE#(P)DATABASE#
L4           3 S RANK?(3W)NODE#(P)DATABASE#
L5           2 S ASSIGN?(2W)RANK(2W)NODE#
L6           5 S ASSIGN?(2W)RANK(P)DATABASE#
```

=> s node ranking

```
          58261 NODE
          3980 RANKING
L7           4 NODE RANKING
              (NODE (W) RANKING)
```

=> d 1-

1. 5,537,392, Jul. 16, 1996, Procedure and device for routing telecommunications in a meshed network; Klaus Wille, et al., 370/248, 406 [IMAGE AVAILABLE]

2. 5,138,615, Aug. 11, 1992, Reconfiguration system and method for high-speed mesh connected local area network; Leslie B. Lamport, et al., 370/400 [IMAGE AVAILABLE]

3. 5,088,091, Feb. 11, 1992, High-speed mesh connected local area network; Michael D. Schroeder, et al., 370/406; 340/825.02 [IMAGE AVAILABLE]

4. 4,953,106, Aug. 28, 1990, Technique for drawing directed graphs; Emden R. Gansner, et al., 345/440, 441; 364/188, 916.3, 920.2, 924, 927.2, 977, 977.1, DIG.2 [IMAGE AVAILABLE]

=> files jpo

'FILES' IS NOT A RECOGNIZED COMMAND

=> file jpoabs

FILE 'JPOABS' ENTERED AT 16:04:44 ON 12 JUL 1999

```
* * * * *
*   J A P A N E S E   P A T E N T   A B S T R A C T S   *
*
```


1. EP 00476810A2, Mar. 25, 1992, Method and system for retrieving data from joined tables in a computer database.; THOMAS WILLIAM JACOPI, G06F 15/40

2. WO 09504988A1, Feb. 16, 1995, SYNTHESISING SPEECH BY CONVERTING PHONEMES TO DIGITAL WAVEFORMS; ANDREW PAUL BREEN, G10L 5/04

=> d his

```
(FILE 'USPAT' ENTERED AT 15:55:22 ON 12 JUL 1999)
L1      43 S LINKED DATABASE#
L2      1 S L1 (P) NODE#
L3      4 S RANK?(3A)NODE#(P)DATABASE#
L4      3 S RANK?(3W)NODE#(P)DATABASE#
L5      2 S ASSIGN?(2W)RANK(2W)NODE#
L6      5 S ASSIGN?(2W)RANK(P)DATABASE#
L7      4 S NODE RANKING
```

```
FILE 'JPOABS' ENTERED AT 16:04:44 ON 12 JUL 1999
L8      1 S NODE RANKING
L9      0 S LINKED DATABASE#
L10     0 S ASSIGN?(2W)RANK(P)DATABASE
```

```
FILE 'EPOABS' ENTERED AT 16:06:23 ON 12 JUL 1999
L11     0 S NODE RANKING
L12     2 S LINKED DATABASE#
```

SEARCH REQUEST FORM

(29)

Examiner # (Mandatory): _____ Requester's Full Name: UYEN LE

Art Unit 2771 Location (Bldg/Room#): PK2-8A12 Phone (circle 305) 306 308) 4134

Serial Number: 09/024,027 Results Format Preferred (circle): PAPER DISK E-MAIL

Title of Invention METHOD FOR NODE RANKING IN A LINKED DATABASE

Inventors (please provide full names): LAWRENCE PAGE

Earliest Priority Date: 10 JAN 1997

Keywords (include any known synonyms registry numbers, explanation of initialisms):

- IMPORTANCE RANK OF N LINKED NODES
- WEIGHTED SUM OF RANKS OF BACKLINK NODES

*requested
2 abstracts from search
from STC
12 July 99*

Search Topic:

Please write detailed statement of the search topic, and the concept of the invention. Describe, as specifically as possible the subject matter to be searched. Define any terms that may have a special meaning. Give examples of relevant citations, authors, etc., if known. You may include a copy of the abstract and the broadcast or most relevant claim(s).

SEE ABSTRACT & CLAIMS ATTACHED

06-07-1999 A07:46

STAFF USE ONLY

Searcher: Loyce Baker

Searcher Phone #: 304-7790

Searcher Location: ELC 270

Date Picked Up: 6/9/99

Date Completed: 6/10/99

Clerical Prep Time: 1.0

Terminal Time: 2.10

Number of Databases: 58

Type of Search

- N.A. Sequence
- A.A. Sequence
- Structure (#)
- Bibliographic
- Litigation 1
- Fulltext
- Procurement
- Other

Vendors (include cost where applicable)

- STN
- Questel/Orbit
- Lexis/Nexis
- WWW/Internet
- In-house sequence systems (list)
- Dialog
- Dr. Link
- Westlaw
- Other (specify)

=====
* Cover Sheet *
* *
* *
=====

*** 09/004,827 ***

* Prepared for: Examiner Uyen Le *
* By : Joyce Baker *
* Date : June 10, 1999 *
* *

Attached are the search results for your request. Please review and let me know if you want to try another approach.

Thanks,
Joyce
308-7796

File 351:DERWENT WPI 1963-1999/UD=9922;UP=9922;UM=9922

(c)1999 Derwent Info Ltd

File 347:JAPIO Oct 1976-1999/Feb.(UPDATED 990603)

(c) 1999 JPO & JAPIO

File 344:Chinese Patents ABS Apr 1985-1999/May

(c) 1999 European Patent Office

Set	Items	Description
S1	957911	CATEGORI? OR RANK OR PRIORIT? OR RATE OR HIERARCH? OR ORDER OR CLASSIF?
S2	1489689	NODE? ? OR PROCESSOR? ? OR CONTROLLER? ? OR TERMINAL? ? OR BRANCH?? ? OR JUNCTION?
S3	2997738	LINK? OR CONNECT? OR JOIN OR COMBINE? OR BACK()LINK? OR BA- CKLINK?
S4	52275	DATABASE? OR DATABANK? OR DATA() (BASE? OR BANK?) OR LIBRARY
S5	90136	INTERNET OR INTRANET OR LAN OR WORLD()WIDE()WEB OR WEB OR - LOCAL()AREA()NETWORK?
S6	82605	CITATION? OR DOCUMENT? OR REPORT? ?
S7	636	WEIGHTED(7N)SUM
S8	3444	(S1(7N)S2)(10N)S3
S9	49	S8(S)S5
S10	1	S9(S)S4
S11	1	S9 AND S4
S12	0	NODE?(S)RANK?(S)LINK?(S)DATABASE?
S13	1	NODE? AND RANK? AND LINK? AND DATABASE?

13/3,K/1 (Item 1 from file: 351)
DIALOG(R)File 351:DERWENT WPI
(c)1999 Derwent Info Ltd. All rts. reserv.

011154935 **Image available**
WPI Acc No: 97-132859/199712
XRPX Acc No: N97-109640

Computer booking system for booking individual ones of set of resources to users of resources - in which database creates pairs of data nodes for each booking and each data node has user field for specifying user for whom booking is scheduled

Patent Assignee: BRITISH TELECOM PLC (BRTE)
Inventor: SKELLS M J D
Number of Countries: 071 Number of Patents: 003
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Main IPC	Week
WO 9704408	A1	19970206	WO 96GB1590	A	19960701	G06F-017/30	199712 B
AU 9663126	A	19970218	AU 9663126	A	19960701	G06F-017/30	199723
EP 842476	A1	19980520	EP 96922141	A	19960701	G06F-017/30	199824
			WO 96GB1590	A	19960701		

Priority Applications (No Type Date): GB 9523206 A 19951113; EP 95305198 A 19950724

Filing Details:

Patent	Kind	Filing Notes	Application	Patent
WO 9704408	A1			
Designated States (National): AL AM AT AU AZ BB BG BR BY CA CH CN CZ DE DK EE ES FI GB GE HU IL IS JP KE KG KP KR KZ LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK TJ TM TR TT UA UG US UZ VN				
Designated States (Regional): AT BE CH DE DK EA ES FI FR GB GR IE IT KE LS LU MC MW NL OA PT SD SE SZ UG				

AU 9663126	A	Based on	WO 9704408
EP 842476	A1	Based on	WO 9704408

Designated States (Regional): DE FR GB IT

Language, Pages: WO 9704408 (E, 30); EP 842476 (E)

... in which database creates pairs of data nodes for each booking and each data node has user field for specifying user for whom booking is scheduled

...Abstract (Basic): The computer booking system includes a unit for booking resources to users, each of which is arranged to create one or a pair of data nodes (50) for each booking. Each data node (50) is associated with an event relating to an individual booking and includes a time field for specifying the time at which the event is scheduled to occur. Each data node (50) is associated with the unit for specifying the event associated with the node .

...

...Each node is located in a single linked list, (time list) of nodes in which the nodes are arranged in order of their event times. Each node is also arranged in a respective one of a set of lists (value lists). In each value list the nodes are arranged in order of their event times, and the value lists are arranged in order of rank . The booking unit is arranged to locate each now node in the value list of the lowest possible rank .

...

...USE - Booking channels between two synchronous digital hierarchy multiplexers in telecommunications network, for e.g booking ports for communications link , or items hired by hire company

...Title Terms: DATABASE ;

File 351:DERWENT WPI 1963-1999/UD=9922;UP=9922;UM=9922

(c)1999 Derwent Info Ltd

File 347:JAPIO Oct 1976-1999/Feb. (UPDATED 990603)

(c) 1999 JPO & JAPIO

File 344:Chinese Patents ABS Apr 1985-1999/May

(c) 1999 European Patent Office

Set	Items	Description
S1	957911	CATEGORI? OR RANK OR PRIORIT? OR RATE OR HIERARCH? OR ORDER OR CLASSIF?
S2	1489689	NODE? ? OR PROCESSOR? ? OR CONTROLLER? ? OR TERMINAL? ? OR BRANCH?? ? OR JUNCTION?
S3	2997738	LINK? OR CONNECT? OR JOIN OR COMBINE? OR BACK()LINK? OR BA- CKLINK?
S4	52275	DATABASE? OR DATABANK? OR DATA() (BASE? OR BANK?) OR LIBRARY
S5	90136	INTERNET OR INTRANET OR LAN OR WORLD()WIDE()WEB OR WEB OR - LOCAL()AREA()NETWORK?
S6	82605	CITATION? OR DOCUMENT? OR REPORT? ?
S7	636	WEIGHTED(7N)SUM
S8	3444	(S1(7N)S2)(10N)S3
S9	49	S8(S)S5
S10	1	S9(S)S4
S11	1	S9 AND S4
S12	0	NODE?(S)RANK?(S)LINK?(S)DATABASE?
S13	1	NODE? AND RANK? AND LINK? AND DATABASE?
S14	25	NODE? AND RANK? AND (LINK? OR BACKLINK? OR BACK()LINK?)
S15	24	S14 NOT S13

15/3,K/1 (Item 1 from file: 351)
DIALOG(R)File 351:DERWENT WPI
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012384231 **Image available**
WPI Acc No: 99-190338/199916
XRPX Acc No: N99-139243

Telecommunications network with tree structure with three node layers having lowest and higher and highest level number of nodes

Patent Assignee: KONINK KPN NV (NEPO)

Inventor: SAMSOM S M

Number of Countries: 082 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Main IPC	Week
WO 9909714	A1	19990225	WO 98EP5286	A	19980817	H04L-012/44	199916 B

Priority Applications (No Type Date): NL 971006797 A 19970819

Filing Details:

Patent	Kind	Filing	Notes	Application	Patent
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WO 9909714 A1

Designated States (National): AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GE GH GM HR HU ID IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG US UZ VN YU ZW

Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SZ UG ZW

Language, Pages: WO 9909714 (E, 22)

Telecommunications network with tree structure with three node layers having lowest and higher and highest level number of nodes

...Abstract (Basic): telecommunications network with tree structure in which the use of type addressing is possible in the event that a signaling message is sent from a **node** from a higher **ranked node** layer to a **node** from a lower **ranked node** layer. Has **node** (4, 5 and 6) from 3rd level comprising transmitter for sending signaling message, and addressing mechanism for feeding to signaling message **node** designation of **node** (11 to 16) associated with message from 1st **node** layer, and type code which designates control function or **node** both of specific type for which signaling message is intended...

...USE - For providing a telecommunications network with **nodes** that are mutually coupled using communication **links** .

...

...telecommunications network with tree structure in which the use of type addressing is possible in the event that a signaling message is sent from a **node** from a higher **ranked node** layer to a **node** from a lower **ranked node** layer...

...**node** from 3rd level 4, 5 and 6...

...**node** associated with message from 1st **node** layer 11 to 16

...Title Terms: **NODE** ;

15/3,K/2 (Item 2 from file: 351)
DIALOG(R)File 351:DERWENT WPI
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011176634 **Image available**
WPI Acc No: 97-154559/199714
XRPX Acc No: N97-127684

Determining additional route in fully or partially meshed communication network - ascertaining whether node has higher or lower ranking node identity than that of neighbouring node so that all nodes are appropriately allocated to restoration routes

Patent Assignee: BRITISH TELECOM PLC (BRTE)

Inventor: BROWN G N; CHNG R S K
Number of Countries: 073 Number of Patents: 006
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Main IPC	Week
WO 9706644	A1	19970220	WO 96GB1913	A	19960806	H04Q-003/66	199714 B
AU 9666652	A	19970305	AU 9666652	A	19960806	H04Q-003/66	199726
NO 9800521	A	19980206	WO 96GB1913	A	19960806	H04Q-000/00	199821
			NO 98521	A	19980206		
EP 843942	A1	19980527	EP 96926491	A	19960806	H04Q-003/66	199825
			WO 96GB1913	A	19960806		
AU 695859	B	19980827	AU 9666652	A	19960806	H04Q-003/66	199846
MX 9706489	A1	19971101	MX 976489	A	19970826	H04Q-003/66	199902

Priority Applications (No Type Date): EP 95305493 A 19950807

Filing Details:

Patent	Kind	Filing Notes	Application	Patent
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WO 9706644 A1

Designated States (National): AL AM AT AU AZ BB BG BR BY CA CH CN CU CZ
DE DK EE ES FI GB GE HU IL IS JP KE KG KP KR KZ LK LR LS LT LU LV MD MG
MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK TJ TM TR TT UA UG US UZ VN

Designated States (Regional): AT BE CH DE DK EA ES FI FR GB GR IE IT KE
LS LU MC MW NL OA PT SD SE SZ UG

AU 9666652 A Based on WO 9706644

EP 843942 A1 Based on WO 9706644

Designated States (Regional): BE CH DE DK ES FI FR GB IT LI NL SE

AU 695859 B Previous Publ. AU 9666652

Based on WO 9706644

Language, Pages: WO 9706644 (E, 25); EP 843942 (E)

... **ascertaining whether node has higher or lower ranking node identity than that of neighbouring node so that all nodes are appropriately allocated to restoration routes**

...Abstract (Basic): The method involves sending a route finder signature from a **node** to a neighbouring **node** on a spare **link** of a span to the neighbouring **node**. The **links** of the span are **ranked**. On the basis of respective unique network **node** identities of the **node** and the neighbouring **node** it is determined whether the **node** has a lower or higher **ranking** relationship with respect to the neighbouring **node**

...

...If the **node** has a higher **ranking**, the route finder signature is sent to the neighbouring **node** on the lowest **ranking** of currently available spare **links** of the span. If the **node** has a lower **ranking**, the route finder signature is sent to the neighbouring **node** on the highest **ranking** of currently available spare **links** of the span...

...ADVANTAGE - Two **nodes** at opposite ends of span can independently allocate **links** from set of spare **links** in span for restoring failed routes, starting from highest **ranked** and lowest **ranked** spares, respectively. Avoids contention for spares

...Title Terms: **NODE** ;

15/3,K/3 (Item 3 from file: 351)

DIALOG(R) File 351:DERWENT WPI

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010992937 **Image available**

WPI Acc No: 96-489886/199649

XRPX Acc No: N96-412818

Soln. method for statistics problem of e.g. mathematical program - by minimising lower-order sequence of problems after simultaneously satisfying attribute limits of problems

Patent Assignee: IBM CORP (IBMC); INT BUSINESS MACHINES CORP (IBMC)

Inventor: LEE H S

Number of Countries: 002 Number of Patents: 002

Patent Family:

Patent No	Kind	Date	Applicat	No	Kind	Date	Main IPC	Week
JP 8249190	A	19960927	JP 9611793	A	19960126	G06F-009/44		199649 B
US 5666469	A	19970909	US 95384979	A	19950207	G06F-017/00		199742

Priority Applications (No Type Date): US 95384979 A 19950207
Language, Pages: JP 8249190 (10); US 5666469 (13)

- ...Abstract (Equivalent): b) building a segment graph in which items are **nodes** of the segment graph...
- ...c) creating an initial search **node** as a current search **node** in a search tree in the segment graph and initialize a search **nodes** stack ...
- ...d) finding open and closed paths of the current search **node** as multiple sets of subsequences wherein a subsequence comprises one or more **nodes** of the segment graph **linked** by an edge according to attributes of the **linked** items and so as not to violate any relevant constraints of the **linked** items...
- ...e) determining if there are any open paths in the current search **node** , if not, going to step (j), but otherwise continuing...
- ...f) from a set of segments in the open paths, collecting all edges and **ranking** them according to a merit that is evaluated by the segment graph structure as well as by a domain objective and from this **ranking** finding the best N edges where N is a beam width and saving the best N edges in sorted order in storage...
- ...g) determining if there are viable edges in the current search **node** and, if not, going to step (j), but otherwise popping the first best edge from storage and pushing it on a search **nodes** stack for future alternative search paths...
- ...h) expanding the search tree by creating a new search **node** in the segment graph, the selected edge concatenating two existing segments into one while creating a new segment in the segment graph...
- ...j) getting aggregate sizes of open and closed paths and if smallest in the search, setting to a solution **nodes** file, but if same as previous smallest, then adding to the solution **nodes** file...
- ...k) determining if the search **nodes** stack is empty or there is a sufficient number of solutions and, if so, terminating the search and exiting to step (l), otherwise popping a **node** from the search **nodes** stack and returning to step (e); and...
- ...l) displaying the search **node** file as a result of the search...

15/3,K/4 (Item 4 from file: 351)
DIALOG(R)File 351:DERWENT WPI
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010667362 **Image available**
WPI Acc No: 96-164316/199617
XRPX Acc No: N96-137859

Automatic keyword extraction appts - has extraction part to extract specific keyword out of node link structure based on keyword ranking

Patent Assignee: RICOH KK (RICO)
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat	No	Kind	Date	Main IPC	Week
JP 8044763	A	19960216	JP 94181075	A	19940802	G06F-017/30		199617 B

Priority Applications (No Type Date): JP 94181075 A 19940802
Language, Pages: JP 8044763 (38)

... has extraction part to extract specific keyword out of node link structure based on keyword ranking

...Abstract (Basic): a syntax parsing part (2) to analyse syntax of the natural language document. A data structure conversion part (3) makes the analysis result of the node structure given by the syntax parsing part, an independent word part. The relation between the independent word part in the node link structure is converted by a data structure conversion part (3) and expressed as a document...

...A ranking operation part (4) follows each node in the node link structure at the structure level between sentences, determining the weighting based on the information level parameter and computes the keyword ranking of the node. An extraction part extracts the specific keyword out of the node link structure based on the ranking.

...Title Terms: NODE ; LINK ;

15/3,K/5 (Item 5 from file: 351)
DIALOG(R)File 351:DERWENT WPI
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010612970 **Image available**
WPI Acc No: 96-109923/199612
XRPX Acc No: N97-381371

OCR document logical structure analyser - determining attributes of lines and cost value measure for validity of determination, and travelling directed graph from start node while summing costs for nodes and links en route and ranking paths found based on sum of associated costs

Patent Assignee: NIPPON IBM KK (IBMC); INT BUSINESS MACHINES CORP (IBMC)

Inventor: TATEISHI Y

Number of Countries: 002 Number of Patents: 002

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Main IPC	Week
JP 8006945	A	19960112	JP 94134014	A	19940616	G06F-017/27	199612 B
US 5669007	A	19970916	US 95395559	A	19950228	G06F-017/27	199743 T

Priority Applications (No Type Date): JP 94134014 A 19940616

Language, Pages: JP 8006945 (23); US 5669007 (25)

... determining attributes of lines and cost value measure for validity of determination, and travelling directed graph from start node while summing costs for nodes and links en route and ranking paths found based on sum of associated costs

...Abstract (Basic): costs. When the process for the whole document is completed, in accordance with a rule specifying the combination of attributes between the adjacent lines, the nodes of a graph are generated, the nodes are linked with each other, and costs are given to the node and links. There are paths for travelling the graph from the root node to the final node, and each of them means the interpretation of a possible logical structure of the document...

...By summing the costs for the travelled nodes and links, a total cost value can be associated with each path, and by prioritising by this total cost value, logical structure interpretations can be sequentially shown...

...Title Terms: NODE ;

15/3,K/6 (Item 6 from file: 351)
DIALOG(R)File 351:DERWENT WPI
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010409905 **Image available**
WPI Acc No: 95-311252/199540
XRPX Acc No: N95-235085

Intelligent hyper-media text system for on-line navigation - stores user goal objects and text panel objects to form hyper-text object, stores link profiles contg. link vectors each having weights representing user activity relationship between objects and uses advisor to create weight-ordered object

Patent Assignee: INT BUSINESS MACHINES CORP (IBMC)
Inventor: CHEN J R; FALLSIDE D C; FENWICK J R; FORCIER M D; KAPLAN C A;
WOLFF G J

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Main IPC	Week
US 5446891	A	19950829	US 92841965	A	19920226	G06F-017/30	199540 B
			US 94333082	A	19941102		B

Priority Applications (No Type Date): US 92841965 A 19920226; US 94333082 A 19941102

Filing Details:

Patent	Kind	Filing Notes	Application	Patent
US 5446891	A	Cont of	US 92841965	

Language, Pages: US 5446891 (17)

... stores user goal objects and text panel objects to form hyper-text object, stores link profiles contg. link vectors each having weights representing user activity relationship between objects and uses advisor to create weight-ordered object

...Abstract (Basic): acquires user characteristics either directly or inferentially. Simple associative networks serve to model user profiles, including relationships between user goals and the hyper-media information **nodes** . Hyper-media **links** to other **nodes** are recommended by **ranking** a **link** list in an order that depends on one or more user profiles containing information relating to users' goals and interests. Users can teach the system directly by rearranging the order of suggested **links** on the list. The system can also learn indirectly by observing how long and in what sequence the user views each hyper-media information **node** .

...

...ADVANTAGE - Avoids overwhelming user with choices by introducing concept of graduated **link** -weight values for ordering **linked nodes** in list, so that most relevant **link** targets appear first in list.
Incorporates **links** between all nodes within hyper medium

...Title Terms: **LINK** ;

15/3,K/7 **(Item 7 from file: 351)**
DIALOG(R)File 351:DERWENT WPI
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010234074 **Image available**
WPI Acc No: 95-135331/199518
XRPX Acc No: N95-106665

Network composition method for telephone circuits - uses traffic network and transmission circuit network to carry out creation and traffic assignment network topology and routing table

Patent Assignee: NIPPON TELEGRAPH & TELEPHONE CORP (NITE)

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Main IPC	Week
JP 7058834	A	19950303	JP 93198222	A	19930810	H04M-003/00	199518 B

Priority Applications (No Type Date): JP 93198222 A 19930810

Language, Pages: JP 7058834 (23)

...Abstract (Basic): sequence indicates the connection between the TN using

010409905 **Image available**
WPI Acc No: 95-311252/199540
XRPX Acc No: N95-235085

Intelligent hyper-media text system for on-line navigation - stores user goal objects and text panel objects to form hyper-text object, stores link profiles contg. link vectors each having weights representing user activity relationship between objects and uses advisor to create weight-ordered object

Patent Assignee: INT BUSINESS MACHINES CORP (IBMC)
Inventor: CHEN J R; FALLSIDE D C; FENWICK J R; FORCIER M D; KAPLAN C A;
WOLFF G J

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Main IPC	Week
US 5446891	A	19950829	US 92841965	A	19920226	G06F-017/30	199540 B
			US 94333082	A	19941102	B	

Priority Applications (No Type Date): US 92841965 A 19920226; US 94333082 A 19941102

Filing Details:

Patent	Kind	Filing Notes	Application	Patent
US 5446891	A	Cont of	US 92841965	

Language, Pages: US 5446891 (17)

... stores user goal objects and text panel objects to form hyper-text object, stores link profiles contg. link vectors each having weights representing user activity relationship between objects and uses advisor to create weight-ordered object

...Abstract (Basic): acquires user characteristics either directly or inferentially. Simple associative networks serve to model user profiles, including relationships between user goals and the hyper-media information nodes . Hyper-media links to other nodes are recommended by ranking a link list in an order that depends on one or more user profiles containing information relating to users' goals and interests. Users can teach the system directly by rearranging the order of suggested links on the list. The system can also learn indirectly by observing how long and in what sequence the user views each hyper-media information node .

...

...ADVANTAGE - Avoids overwhelming user with choices by introducing concept of graduated link -weight values for ordering linked nodes in list, so that most relevant link targets appear first in list. Incorporates links between all nodes within hyper medium

...Title Terms: LINK ;

15/3,K/7 (Item 7 from file: 351)
DIALOG(R)File 351:DERWENT WPI
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010234074 **Image available**
WPI Acc No: 95-135331/199518
XRPX Acc No: N95-106665

Network composition method for telephone circuits - uses traffic network and transmission circuit network to carry out creation and traffic assignment network topology and routing table

Patent Assignee: NIPPON TELEGRAPH & TELEPHONE CORP (NITE)

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Main IPC	Week
JP 7058834	A	19950303	JP 93198222	A	19930810	H04M-003/00	199518 B

Priority Applications (No Type Date): JP 93198222 A 19930810

Language, Pages: JP 7058834 (23)

...Abstract (Basic): sequence indicates the connection between the TN using

a traffic network design part (15). The routing table in which the last destination and the low **rank node** of a call for every TN is created with a network creation part (17). Based on the routing table, a traffic is assigned to the...

...The traffic intensity which flows to a traffic **link** is performed with a traffic assignment part (18). The exchange corresponding to traffic intensity which flows through the TN and the number of exchanges are...

...indirect continuation sequence indicates the connection between exchanges. The routing table for every exchange is created by a routing table creation means (23) for every **node** .

15/3,K/8 (Item 8 from file: 351)
DIALOG(R)File 351:DERWENT WPI
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010231107 **Image available**
WPI Acc No: 95-132364/199518
XRPX Acc No: N95-104157

Automatic decomposition of network topology into backbone and sub areas - performs automatic decomposition of packet switching network in backbone nodes and sub areas to speed up routing path search without degrading optimisation criterion of routing algorithm

Patent Assignee: INT BUSINESS MACHINES CORP (IBMC); IBM CORP (IBMC)
Inventor: GALAND C; SCOTTON P; GALAAND C

Number of Countries: 014 Number of Patents: 005

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Main IPC	Week
EP 637153	A1	19950201	EP 93480105	A	19930730	H04L-012/56	199518 B
CA 2123441	A	19950131	CA 2123441	A	19940512	H04L-012/56	199518
JP 7066834	A	19950310	JP 94154988	A	19940706	H04L-012/56	199519
US 5495479	A	19960227	US 94262089	A	19940620	H04L-012/56	199614
CA 2123441	C	19990216	CA 2123441	A	19940512	H04L-012/56	199918

Priority Applications (No Type Date): EP 93480105 A 19930730

Filing Details:

Patent	Kind	Filing Notes	Application	Patent
EP 637153	A1			

Designated States (Regional): AT BE CH DE ES FR GB IT LI NL SE
Language, Pages: EP 637153 (E, 42); JP 7066834 (23); US 5495479 (34)

... performs automatic decomposition of packet switching network in backbone nodes and sub areas to speed up routing path search without degrading optimisation criterion of routing algorithm

...Abstract (Basic): The access **node** receives and transmits data packets (301, 302 and 304) and stores the network configuration. It automatically pre-selects a set of usable **links** for each destination **node** located in the network, and stores locally the pre-selection of the usable **links** .

...

...The pre-linking includes decomposing the network into a set of backbone **nodes** and several subarea **nodes** . Backbone **links** are **links** connecting two backbone **nodes** , and subarea **links** are **links** connecting either two **nodes** in the same subarea or a subarea **node** and a backbone **node** .

...Abstract (Equivalent): A network access **node** (300) for a packet switching communication network (200) comprising a plurality of network **nodes** (201-208) interconnected with transmission **links** (209), said network **nodes** being connected to termination **nodes** , said access **node** including means for receiving and transmitting data packets (301, 302, 304), and data storage means (306) for storing data representing the network configuration, said network access **node** further including

...

...selecting means for selecting a set of **links** suitable for use as part of a path to each destination termination **node** located in the network, said selecting means further include clustering means for decomposing said network into a set of backbone **nodes** and a plurality of subarea **nodes** , said clustering means further comprising...

...sorting means for **ranking** all **nodes** according to the number of **links** connected to the **nodes** ,

...

...tree forming means for constructing a connectivity tree in which each **node** in the network appears only once and in which the tree origin is the highest **rank node** found by said sorting means...

...classifying means for classifying **nodes** into backbone **nodes** and subarea **nodes** , backbone **nodes** being all non-termination **nodes** and any termination **node** which is connected only to one other **node** and subarea **nodes** being any **node** that is not a backbone **node** , subarea **nodes** having the same parent being categorized in the same subarea...

...means for defining a backbone path between two subareas, the backbone path including a **link** to each subarea interconnected through the highest **ranked node** from the set of **nodes** connecting the two **links** ,

...

...means for removing from the set of backbone to subarea **links** , any **link** in which the parent **node** in the subarea is not connected to the parent in the backbone and any **link** to a subarea having less than a predetermined number of **nodes** ;

...

...storage means for storing data representing the sets of **links** selected by said selecting means; and...

...means responsive to a request for a connection between said access **node** and a destination **node** to establish a routing path including **links** from the set of **links** selected for the destination **node** .

...Title Terms: **NODE** ;

15/3,K/9 (Item 9 from file: 351)
 DIALOG(R)File 351:DERWENT WPI
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007321012

WPI Acc No: 87-318019/198745

Data link token passing system for transmitter - has coupler uniting with each loop network for different rank terminal nodes NoAbstract Dwg 0/7

Patent Assignee: HITACHI LTD (HITA)

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Main IPC	Week
JP 62226744	A	19871005	JP 8668465	A	19860328		198745 B

Priority Applications (No Type Date): JP 8668465 A 19860328

Language, Pages: JP 62226744 (4)

Data link token passing system for transmitter...

...has coupler uniting with each loop network for different rank terminal nodes **NoAbstract Dwg 0/7**

...Title Terms: **LINK** ;

15/3,K/10 (Item 10 from file: 351)

DIALOG(R)File 351:DERWENT WPI
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007098585

WPI Acc No: 87-098582/198714

Priority sequenced exchange carrier link system for network - has preferential order data memory table permitting superior ranking trap of on-line channel, and host processor. NoAbstract Dwg 0/4

Patent Assignee: FUJITSU LTD (FUIT)

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Main IPC	Week
JP 62047761	A	19870302	JP 85189066	A	19850827		198714 B

Priority Applications (No Type Date): JP 85189066 A 19850827

Language, Pages: JP 62047761 (7)

Priority sequenced exchange carrier link system for network...

...has preferential order data memory table permitting superior ranking trap of on-line channel, and host processor. NoAbstract Dwg 0/4

...Title Terms: LINK ;

15/3,K/11 (Item 11 from file: 351)

DIALOG(R)File 351:DERWENT WPI
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004527026

WPI Acc No: 86-030370/198605

XRPX Acc No: N86-021899

Last intermediate node determ. in minimised switching net - establishing both local and general routing tables, and comparing elements of equal rank in column and row

Patent Assignee: JEUMONT SCHNEIDER SA (JEUM); JS TELECOMMUNICATIO (JSTE-N)

Inventor: DEVEZE P

Number of Countries: 015 Number of Patents: 008

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Main IPC	Week
EP 169757	A	19860129	EP 85401243	A	19850621		198605 B
FR 2567345	A	19860110					198609
ZA 8505050	A	19860110					198614
JP 61082562	A	19860426	JP 85146436	A	19850703		198623
CA 1235468	A	19880419					198820
US 4748660	A	19880531	US 85749007	A	19850626		198824
EP 169757	B	19900905					199036
DE 3579522	G	19901011					199042

Priority Applications (No Type Date): FR 8410612 A 19840704

Filing Details:

Patent	Kind	Filing Notes	Application	Patent
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EP 169757	A			
Designated States (Regional): AT BE CH DE FR GB IT LI LU NL SE				

EP 169757	B			
Designated States (Regional): AT BE CH DE FR GB IT LI LU NL SE				

Language, Pages: EP 169757 (F, 20)

Last intermediate node determ. in minimised switching net...

...establishing both local and general routing tables, and comparing elements of equal rank in column and row

...Abstract (Basic): An electronic circuit located at an mth node incorporates a detector (1) for the elements (a sub ij) o f the matrix (R1) representing direct paths, if any, to the nth node . The matrix and the last rows of a calculated matrix (Rq) are stored in a memory (3) from which a reader (41) extracts the nth...

...Elements of equal **rank** in column and row are compared (5) and an output circuit (6) stores the address (i) of the last intermediate **node** corresp. to the **rank** of a non-xzeroe element found by the comparison...

...Abstract (Equivalent): A method of determining the last intermediate **node** of a route having a minimum of **nodes**, for going from the m-th **node** to the n-th **node**, in a network comprising p **nodes** interconnected by means of a plurality of sections (p being a positive integer), more particularly designed for routing both data between networked computers and telephonic...

...and storing the square matrix $R_i = a_{ij}^{pp}$ such that $a_{ij} = 0$ if there is no direct section from the i-th to the j-th **node** and $a_{ij} = 1$ if a direct section exists from the i-th to the j-th **node**, determining the existence of at least one path in two sections from the m-th to the n-th mode, where the direct section does not exist, by comparing the elements of the same **rank** of the m-th line and of the n-th column of said matrix R_1 , the existence and the **rank** of any non-zero elements common to the m-th line and to the n-th column indicating the presence and the sequential position of an intermediate **node** of at least one two-section route, in the sence of any such common non-zero element, by iteration for any q varying from 2 to p-2 until a route of (q-1) sections has been determined to connect the m-th **node** to the n-th **node**, the square matrix $X_q = R_q \cdot R_1 = Z_{ij}^{!pp}$ equal to the product of matrices R_{q-1} and R_1 is computed and then the square...

...1 if X_{ij} or a_{ij} is other than zero and $b_{ij} = 0$ if X_{ij} and a_{ij} are both zero; and the elements of the same **rank** of the m-th line of matrix R_q and of the n-th column of matrix R_1 are compared, the existence and the **rank** of any common non-zero elements indicating the presence and the sequential position of at least one possible last intermediate **node** of a route with q+1 sections. (13pp)

...Abstract (Equivalent): The process determines the last intermediate **node** of a pathway comprising a min. number of **nodes** from the m-th **node** to the n-th **node** in a network comprising p **nodes** interconnected by a number of **links** (p being a positive whole number

...

...The process includes steps of iterative matrix calculation and comparison of elements of the same **rank** of certain matrices, and is esp. suitable for communications networks constituted by a number of geographically separated **nodes** connected to one another by communications lines. (8pp)b

...Title Terms: **NODE** ;

15/3,K/12 (Item 12 from file: 351)
 DIALOG(R) File 351:DERWENT WPI
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004430928

WPI Acc No: 85-257806/198542

XRPX Acc No: N85-192701

Local area network - has nodes in ring topology passing at least two classes of synchronous information on receiving token

Patent Assignee: UNISEARCH LTD (UNIX)

Inventor: ANIDO G J; KARBOWIAK A E

Number of Countries: 006 Number of Patents: 003

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Main IPC	Week
EP 158364	A	19851016	EP 85104464	A	19850412		198542 B
AU 8540998	A	19851017					198547
US 4663748	A	19870505	US 85720880	A	19850408		198720

Priority Applications (No Type Date): AU 844548 A 19840412

Filing Details:

Patent Kind Filing Notes Application Patent

EP 158364 A

Designated States (Regional): DE FR GB SE

Language, Pages: EP 158364 (E, 105)

... has nodes in ring topology passing at least two classes of synchronous information on receiving token

...Abstract (Basic): token. The token is in the form of a unique digital code. The system carries at least two classes of information, each assigned a priority ranking. At least one class is synchronous information for which the transmitting node must be serviced periodically...

...A new system transmission cycle is commenced at regular time intervals. Each node operates under a protocol where a first pass of the token around the ring during a system cycle is used to transmit synchronous information of the highest priority ranking. The time token for each pass of the token is dependent on the number of nodes.

...Abstract (Equivalent): The network has a ring topology comprising a number of nodes (10) each of which is connected to adjacent nodes by links (14,15). Each node comprises a Link Interface Unit (LIU) (11), a Network Inter force Unit (NIU) (12) and a Terminal Interface Unit (TIU) (13). By providing forward and reverse links (14,15) between nodes, the communication system is capable of reconfiguring itself after link or node failure such that the failed equipment can be bypassed to minimise system disruption...

...The link Interface Units (LIU) (11) are also capable of bypassing their own node if a node failure is detected. System control is decentralised with each active node contributing to system control such that prime-failure sites are avoided. System protocol depends upon a token passing scheme where only the node (10) currently holding the token is entitled to transmit data and once it has fins finished its transmission the node (10) passes the token to the next node

...Title Terms: NODE ;

15/3,K/13 (Item 13 from file: 351)

DIALOG(R)File 351:DERWENT WPI

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003387079

WPI Acc No: 82-P5115E/198244

Diagnostics of mechanisms - by converting schematic structural diagram into weighted functional diagram to enable weakest elements to be identified

Patent Assignee: MOGIL MECH ENG INST (MOGI-R)

Inventor: BLAGODARNY V M; DANOV A M; EMELYANOV K K

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat	No	Kind	Date	Main IPC	Week
SU 896461	B	19820107						198244 B

Priority Applications (No Type Date): SU 2892051 A 19800305

Language, Pages: SU 896461 (5)

...Abstract (Basic): A method of finding the weakest links in a complex mechanism which limit the life expectancy of the entire unit is based on first constructing a structural schematic diagram for the mechanism in which the elements are represented by the nodes, and the functions between them by the links. The highest ranks of the nodes of the diagram are determined and the elements are grouped into diagnostic sections...

...This structural diagram is converted to a functional diagram in which the nodes represent the functions, and the links represent the elements. The links of the functional diagram are given a weight, proportional to the transmission ratio, and the links of the structural diagram are given a weight proportional to the rank as regards the inputs of the nodes of the functional diagram which

correspond to them. **Nodes** of the structural diagram with the highest **ranks** are then included in the list of the weakest members. This reduces the amount of calculation and preparation in the design of complex mechanisms. Bul...

15/3,K/14 (Item 1 from file: 347)

DIALOG(R) File 347:JAPIO

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06011633 **Image available**

DISPLAY METHOD FOR COMMUNICATION NETWORK CONFIGURATION

PUB. NO.: 10-294733 [JP 10294733 A]
PUBLISHED: November 04, 1998 (19981104)
INVENTOR(s): YOKOYAMA TAKAKO
APPLICANT(s): OKI ELECTRIC IND CO LTD [000029] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 09-103506 [JP 97103506]
FILED: April 21, 1997 (19970421)

ABSTRACT

...SOLUTION: An exchange at a highest **rank node** is extracted from a **node** information 11 (S11). Then an exchange of a 2nd **rank node** is retrieved (S12) from a **link** information 12, and hierarchical sequencing of the retrieved exchanges is made (S13), and the result is stored (S14) as hierarchical structure data 13. When hierarchical...

15/3,K/15 (Item 2 from file: 347)

DIALOG(R) File 347:JAPIO

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05089263 **Image available**

AUTOMATIC KEY WORD EXTRACTING DEVICE

PUB. NO.: 08-044763 [JP 8044763 A]
PUBLISHED: February 16, 1996 (19960216)
INVENTOR(s): YOKOGAWA TOSHIHIKO
APPLICANT(s): RICOH CO LTD [000674] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 06-181075 [JP 94181075]
FILED: August 02, 1994 (19940802)

ABSTRACT

...CONSTITUTION: A data converting means 3 converts the analytic result of a syntax analyzing means 2 into a **node link** structure connecting **node link** structures by regarding regarding independent word parts as the **node** structures and the relation between the independent word parts as a **link** structure and a **ranking** arithmetic means 4 calculates the key word **ranking** of respective **nodes** in the **node link** structure by following the **nodes** while weighting them on the basis of parameters corresponding to the level of information on inter-sentence structure level or in-sentence structure level, thereby using the **ranking** for key word extraction.

15/3,K/16 (Item 3 from file: 347)

DIALOG(R) File 347:JAPIO

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04828827 **Image available**

HYPER TEXT DEVICE

PUB. NO.: 07-121427 [JP 7121427 A]
PUBLISHED: May 12, 1995 (19950512)
INVENTOR(s): SHIMIZU TAKESHI
SAITO TAKAHIRO

NAKAMURA OSAMU

APPLICANT(s): FUJI XEROX CO LTD [359761] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 05-289761 [JP 93289761]
FILED: October 27, 1993 (19931027)

ABSTRACT

PURPOSE: To easily construct an application program which switches **node** display at every prescribed time in a specified order by giving a **rank** to a **link** between the **nodes** of a hyper text and providing a user interface operating the **rank** .

...
... by the operation of a user and informs an interface control part 1 of it. A program execution part 3 indicates the generation of the **nodes** , the generation of the **link** and the change operation of the **link rank** to a **node** information management part 5, a **link** information management part 6 and a **link rank** operation part 7 by the indication of the interface control part 1. The **node** information management part 5 manages plural **node** information structures holding information on the **nodes** and the **link** information management part 6 manages the plural **link** information structures holding the relation between the **nodes** . The **link rank** operation part 7 changes the **rank** of the **link** information structures 9 referred by the **node** information management part 5 by the indication of the program execution part 3.

15/3,K/17 (Item 4 from file: 347)

DIALOG(R) File 347:JAPIO
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04571013 **Image available**
DISPLAY DEVICE PROVIDED WITH **NODE** ON MULTIWINDOW

PUB. NO.: 06-242913 [JP 6242913 A]
PUBLISHED: September 02, 1994 (19940902)
INVENTOR(s): YAMAGUCHI SHUICHI
APPLICANT(s): TOSHIBA MEDICAL ENG CO LTD [491188] (A Japanese Company or Corporation), JP (Japan)
TOSHIBA CORP [000307] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 05-027070 [JP 9327070]
FILED: February 17, 1993 (19930217)
JOURNAL: Section: P, Section No. 1835, Vol. 18, No. 630, Pg. 126, November 30, 1994 (19941130)

DISPLAY DEVICE PROVIDED WITH **NODE** ON MULTIWINDOW

ABSTRACT

...CONSTITUTION: This device is equipped with a window management list 20 constituted of a window ID21 and **node** number 22, **node** information list 30 constituted of a **node** number 31 and window information 32, **node** relation list 40, and data connection relation managing means which manages the connection relation of data. The window information 32 is equipped with a window ID32-1, classification 32-2, size 32-3, preparing time 32-4, protection information 32-5, number of **link** 32-6, and relation list pointer 32-7. In the window relation list, higher-**rank** layer, window itself, same-**rank** layer, and lower-**rank** layer are expressed by a **node** division 41 for classifying the window to be referred to and the related windows, and specifying the hierarchical structure of the classified windows by upper...

15/3,K/18 (Item 5 from file: 347)

DIALOG(R) File 347:JAPIO
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04497140 **Image available**

INDIVIDUAL BLOCK TRANSFER SYSTEM WITH HEADER IN DISTRIBUTED TYPE
COMMUNICATION NETWORK

PUB. NO.: 06-141040 [JP 6141040 A]
PUBLISHED: May 20, 1994 (19940520)
INVENTOR(s): TAKASE JIYUUROU
APPLICANT(s): TAKASE JIYUUROU [000000] (An Individual), JP (Japan)
APPL. NO.: 04-327150 [JP 92327150]
FILED: October 26, 1992 (19921026)
JOURNAL: Section: E, Section No. 1594, Vol. 18, No. 447, Pg. 122,
August 19, 1994 (19940819)

ABSTRACT

PURPOSE: To control the overflow of a buffet in each switching **node** and to hold reliability by keeping tendency to uniformize the distribution of the flow rate density of a block signal with header in a network...

...CONSTITUTION: The block signal with header (HB) arriving from an input route **link** in a transmission network and a subscriber network inputted to input terminals 14, 15 is read out by an identification information reader group 16, and is sent to an output route **link** number indicator group 17 and an HB switch 24. The indicator group 17 decides the output route of the switch 24 based on an identification...

... measures the number of HB signals per time running on the output route, and sends it to the comparator 26. The comparator 26 sends the **rank** information of the output route with large flow rate allowance for the flow rate limitation of each output route to the indicator group 17 by...

15/3,K/19 (Item 6 from file: 347)
DIALOG(R) File 347:JAPIO
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03385654 **Image available**
PACKET SWITCHBOARD

PUB. NO.: 03-048554 [JP 3048554 A]
PUBLISHED: March 01, 1991 (19910301)
INVENTOR(s): ABE MASAMI
NOGUCHI OSAMU
APPLICANT(s): OKI ELECTRIC IND CO LTD [000029] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 01-251875 [JP 89251875]
FILED: September 29, 1989 (19890929)
JOURNAL: Section: E, Section No. 1067, Vol. 15, No. 187, Pg. 83, May 14, 1991 (19910514)

ABSTRACT

... efficiently use a connection network by setting a single route in unit of call of the route with a switch route setting processor when a **node** route setting processor selects the route...

...CONSTITUTION: The **node** route setting processor 14 makes access a module **link** working table 16, and discriminates the route with the highest allowance on a traffic, and sets a switching module SM 12 and a **rank** included in the route of the connection network 10 of a switching machine 60. The switch route setting processor 30 of the SM 12 receiving...

... when receiving a report feasible to perform the setting of the route, instructs the change of a routing header correspondence table 32 and a switch **link** working table 34 to the processor 30, and changes its own working table 16. Thus, the single route can be set in unit of call...

15/3,K/20 (Item 7 from file: 347)
DIALOG(R) File 347:JAPIO
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03374880 **Image available**
RELATIVE **RANK** ANALYZING SYSTEM FOR DATA DRIVING TYPE PROCESSOR

PUB. NO.: 03-037780 [JP 3037780 A]
PUBLISHED: February 19, 1991 (19910219)
INVENTOR(s): NAITOU HIROMIKI
APPLICANT(s): SHARP CORP [000504] (A Japanese Company or Corporation), JP
 (Japan)
APPL. NO.: 01-172578 [JP 89172578]
FILED: July 04, 1989 (19890704)
JOURNAL: Section: P, Section No. 1198, Vol. 15, No. 176, Pg. 61, May
 07, 1991 (19910507)

RELATIVE **RANK** ANALYZING SYSTEM FOR DATA DRIVING TYPE PROCESSOR

ABSTRACT

PURPOSE: To generate an execution object at a high speed by bringing each intermediate object to relative **ranking** in advance...

... and generated are compiled to intermediate objects 2 shown by a flow graph, respectively, and a variable giving means gives a variable corresponding to its **rank** value to a **node** of the head of the flow graph shown by the intermediate object 2. Subsequently, a relative **rank** value giving means discriminates the number of arcs inputted to a node with regard to the **node** after the head, compares **rank** values of the **node** immediately before and gives a relative **rank** value to its **node** or the arc. Also, at the time of **linking** the intermediate object 2, a registering means registers an absolute **rank** value corresponding to the execution sequence of the head **node** to a variable, therefore, the absolute **rank** value of all the **nodes** is determined immediately. In this regard, the variable giving means, the relative **rank** value giving means and the registering means are softwares. In such a way, the **rank** analysis becomes unnecessary and the execution object can be generated at a high speed.

15/3,K/21 (Item 8 from file: 347)
DIALOG(R)File 347:JAPIO
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03248692 **Image available**
METHOD FOR DIVIDING PROGRAM

PUB. NO.: 02-224192 [JP 2224192 A]
PUBLISHED: September 06, 1990 (19900906)
INVENTOR(s): INAOKA MIE
 MUNAKATA KOICHI
 SHIMA KENJI
APPLICANT(s): MITSUBISHI ELECTRIC CORP [000601] (A Japanese Company or
 Corporation), JP (Japan)
APPL. NO.: 01-045641 [JP 8945641]
FILED: February 27, 1989 (19890227)
JOURNAL: Section: P, Section No. 1134, Vol. 14, No. 530, Pg. 104,
 November 21, 1990 (19901121)

ABSTRACT

PURPOSE: To evade the drop of through-put due to excessive division and a saturated state due to the lack of division by dividing **nodes** so that the number of **nodes** in each **rank** of a program to be executed by plural processors is uniformed...

...CONSTITUTION: A data driving type processor consists of an input control part 1, a **link** table 2, a function table 3, an address formation/flow control part 4, a data memory 5, a queue 6, an output queue 8, an...

... number of packets is set up to a value less than the sum of the number of pipeline stages and the buffer size and respective **nodes** are allocated to respective processors so that the number of **nodes** in each **rank** is

uniformed. Consequently, the drop of the through-put due to excessive division can be prevented and the saturated state of a circulated pipeline due...

15/3,K/22 (Item 9 from file: 347)

DIALOG(R)File 347:JAPIO

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02992434 **Image available**

GRAPH STORING SYSTEM

PUB. NO.: 01-290034 [JP 1290034 A]

PUBLISHED: November 21, 1989 (19891121)

INVENTOR(s): SHIOBARA MORIHITO

NAKAGAWA KOYO

GOTO TOSHIYUKI

APPLICANT(s): FUJITSU LTD [000522] (A Japanese Company or Corporation), JP (Japan)

APPL. NO.: 63-119299 [JP 88119299]

FILED: May 18, 1988 (19880518)

JOURNAL: Section: P, Section No. 1004, Vol. 14, No. 72, Pg. 55, February 09, 1990 (19900209)

ABSTRACT

... increase collating and searching speeds and at the same time to reduce the capacity of a cache memory by storing the scale evaluation values of **NODEs** in the order of larger values and based on the scale (**NODE** number, **LINK** length, etc.,) designated by a user...

...CONSTITUTION: A full **NODE** evaluation value calculation means 10 repeats the selecting procedure of a slave **NODE** selection means 8 and the evaluation value calculating procedure of a master **NODE** evaluation value calculation means 9 up to the root **NODE** from the leaf **NODE** meaning the lowest **rank** of a tree structure produced by a tree structure evolution means 6. Thus the means 10 decides the evaluation values of all **NODEs**. A graph production means 11 evaluates the value of each **NODE** and at the same time rearranges the graphs stored in a 1st graph holding means 5 in the order of larger evaluation values for production of a graph. Thus a graph showing the connecting relation between the **NODEs** and the **LINK** is evolved into a tree structure with a certain **NODE** defined as a root. Then the evaluation value of each **NODE** is calculated toward the higher **ranks** from the lowest **rank** leaf **NODE** gathering. Then the **NODEs** are rearranged in the order of higher evaluation values. Thus the comparison is facilitated among evaluation values in the retrieving and collating modes.

15/3,K/23 (Item 10 from file: 347)

DIALOG(R)File 347:JAPIO

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02848122

INTER-WORD SEMANTIC RELATION DECIDING SYSTEM

PUB. NO.: 01-145722 [JP 1145722 A]

PUBLISHED: June 07, 1989 (19890607)

INVENTOR(s): ONOYAMA TAKASHI

APPLICANT(s): HITACHI SOFTWARE ENG CO LTD [472485] (A Japanese Company or Corporation), JP (Japan)

APPL. NO.: 62-305377 [JP 87305377]

FILED: December 01, 1987 (19871201)

JOURNAL: Section: P, Section No. 929, Vol. 13, No. 403, Pg. 117, September 07, 1989 (19890907)

ABSTRACT

... speed the semantic relation between words, which is expressed by a tree structure data by comparing large and small relations of the number of lower **nodes** of each **node** which is stored in a semantic table, in accordance with a search **rank** order and deciding an inclusive relation of

semantics between words...

...CONSTITUTION: The title system is provided with a semantic table for coordinating each word to each **node** of a tree, **linking** between each **node**, executing a search of each **node** of a tree structure data by a depth priority search in advance with respect to the tree structure data which has expressed a semantic relation between words, deriving the number of lower **nodes** contained in the lower **rank** of each **node**, and storing the number of lower **nodes** in accordance with a search **rank** order of each **node**. Accordingly, an inclusive relation of each **node** can be decided by comparing the numerical values of large and small relations of a **rank** order of a table data, and large and small relations of the number of lower **nodes** stored in accordance with its **rank** order and the **rank** order difference, by which an inclusive relation of semantics between words can be decided at a high speed.

15/3,K/24 (Item 11 from file: 347)

DIALOG(R)File 347:JAPIO

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01182957 **Image available**

PATH RETRIEVAL SYSTEM

PUB. NO.: 58-120357 [JP 58120357 A]

PUBLISHED: July 18, 1983 (19830718)

INVENTOR(s): NAKAMURA MAMIKO

SHIOHAMA JIRO

OKI KATSUHIRO

APPLICANT(s): FUJITSU LTD [000522]..(A Japanese Company or Corporation), JP
(Japan)

APPL. NO.: 57-003822 [JP 823822]

FILED: January 13, 1982 (19820113)

JOURNAL: Section: E, Section No. 203, Vol. 07, No. 229, Pg. 145,
October 12, 1983 (19831012)

ABSTRACT

PURPOSE: To retrieve the minimum path with a slight storage area even if there is a limit in the number of **links**, by using a specific path retrieval algorithm and performing the retrieval of reciprocating path from a start **node** to an end **node** with the limited **link** number...

...CONSTITUTION: First, label of the start **node** (s) is denoted as 0000. A **node** label is determined as to **nodes** c, a, t of a **link rank** 1 toward the **node** s. Next, the label is determined for the **link rank** 2, i.e., **nodes** a, d, b toward the **nodes** c, a, t. In case of the **node** (a), the new and old labels are compared, and when the number of **link** of the new label is large and the interval from the **node** (s) is short, the label is revised into the new one. The label is determined for the **nodes** e.t.b being the **rank** 3, and similar operations are performed. In case of the **link rank** 4, since the limit of the number of **links** is limited to 3, back tracing is performed. The label having the **link** number less by 1 is adopted, and the counter **node** is found out with the label, and the path is retrieved up to the **node** (s) and this path is adopted.

File 2:INSPEC 1969-1999/May W5
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(c) 1999 American Mathematical Society
File 144:Pascal 1973-1999/May
(c) 1999 INIST/CNRS
File 77:Conference Papers Index 1973-1999/May
(c) 1999 Cambridge Sci Abs
File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec
(c) 1998 Inst for Sci Info
File 108:Aerospace Database 1962-1999/Apr
(c) 1999 AIAA
File 233:Microcomputer Abstracts 1974-1999/Jun
(c) 1999 Information Today Incl.
File 103:Energy SciTec 1974-1999/May B2
(c) 1999 Contains copyrighted material
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File 35:Dissertation Abstracts Online 1861-1999/Jun
(c) 1999 UMI
File 202:Information Science Abs. 1966-1999/Mar
(c) Information Today, Inc
File 94:JICST-EPlus 1985-1999/Feb W4
(c)1999 Japan Science and Tech Corp(JST)
File 370:Science 1996-1999/Apr W3
(c) 1999 AAAS
File 99:Wilson Appl. Sci & Tech Abs 1983-1999/Apr
(c) 1999 The HW Wilson Co.

Set	Items	Description
S1	5293185	CATEGORI? OR RANK OR PRIORIT? OR RATE OR HIERARCH? OR ORDER OR CLASSIF?
S2	1472309	NODE? ? OR PROCESSOR? ? OR CONTROLLER? ? OR TERMINAL? ? OR BRANCH?? ? OR JUNCTION?
S3	2259998	LINK? OR CONNECT? OR JOIN OR COMBINE? OR BACK()LINK? OR BA- CKLINK?
S4	755880	DATABASE? OR DATABANK? OR DATA() (BASE? OR BANK?) OR LIBRARY
S5	184785	INTERNET OR INTRANET OR LAN OR WORLD()WIDE()WEB OR WEB OR - LOCAL()AREA()NETWORK?
S6	3334689	CITATION? OR DOCUMENT? OR REPORT? ?
S7	7470	WEIGHTED(7N)SUM
S8	1795	(S1(7N)S2)(10N)S3
S9	44	S8(S)S5
S10	34	RD (unique items)

10/3,K/1 (Item 1 from file: 2)

DIALOG(R)File 2:INSPEC

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5969198 INSPEC Abstract Number: C9808-6160Z-029

Title: Some conditions for cost efficiency in hypermedia

Author(s): Westland, J.C.

Author Affiliation: Hong Kong Univ., Hong Kong

Journal: Information Processing & Management vol.34, no.2-3 p.
309-23

Publisher: Elsevier,

Publication Date: March-May 1998 Country of Publication: UK

CODEN: IPMADK ISSN: 0306-4573

SICI: 0306-4573(199803/05)34:2/3L.309:SCCE;1-J

Material Identity Number: I276-98002

U.S. Copyright Clearance Center Code: 0306-4573/98/\$19.00+0.00

Language: English

Copyright 1998, IEE

...Abstract: in multimedia and hypertext have created new opportunities for providing information to business and consumers. Hypermedia has appeared as an important tool for accessing the **Internet**. Prior hypermedia research mainly has recommended design standards for the interface. The current research models the administrative and operating costs surrounding a hypermedia database, and...

...as the learning rate increases-large databases are more easily justified if the users can be assured of picking up useful information when traversing the **nodes**. The learning **rate** can be increased by careful construction of **links** and nodes so that they are maximally informative.

10/3,K/2 (Item 2 from file: 2)

DIALOG(R)File 2:INSPEC

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5940035 INSPEC Abstract Number: C9807-7210-044

Title: Semantic stimulus structure in World Wide Web interface design for navigation by novice users

Author(s): Knizhnik, S.Z.; van Hemel, P.E.; Miller, M.; Goldfield, G.

Author Affiliation: Hughes Training Inc., Falls Church, VA, USA

Conference Title: Design of Computing Systems: Cognitive Considerations. Proceedings of the Seventh International Conference on Human-Computer Interaction (HCI International '97) Part vol.2 p.823-6 vol.2

Editor(s): Salvendy, G.; Smith, M.J.; Koubek, R.J.

Publisher: Elsevier, Amsterdam, Netherlands

Publication Date: 1997 Country of Publication: Netherlands 2 vol.
(xxvi+879+xxviii+1027) pp.

ISBN: 0 444 82183 X Material Identity Number: XX98-01308

Conference Title: Proceedings of HCI International 97. 7th International Conference on Human Computer Interaction jointly with 13th Symposium on Human Interface

Conference Date: 24-29 Aug. 1997 Conference Location: San Francisco, CA, USA

Language: English

Copyright 1998, IEE

Abstract: Human interaction with the **World Wide Web** system presents users with a very complex challenge. One of the most significant factors contributing to this challenge is user comprehension of interaction with **Web** structure. Perhaps the most difficult aspect of this interaction is that, in **order** to follow or backtrack among **linked** information **nodes**, it is often necessary to follow complex navigation paths between and within **Internet** sites. With more and more information being added to the **Internet** every day, response times and, in turn, usability, continue to get worse. **Web** browsers are becoming more complex and more difficult to use. They have more features and users need to hunt down and install extensions before advanced **Web** sites can be accessed. There is wide variability in the usability designed into **Web** sites and interfaces, and these interfaces are seldom designed for the novice user. Consequently, the

novice user browsing the **Web** is almost inevitably faced with changing interfaces, unfamiliar navigation models, new applets, and new interaction styles that are confusing at best. The paper reports the results of a study to compare the performance of users, ranging in **Web** experience from novice to advanced, on **Web** software applications. It was hypothesized that novice users, applying a poorly differentiated and unstructured conceptual model for **Internet / Web** navigation, would exhibit poorer performance than advanced users on tasks requiring **Internet** navigation for their completion.

10/3,K/3 (Item 3 from file: 2)

DIALOG(R)File 2:INSPEC

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5890775 INSPEC Abstract Number: B9805-6150C-082

Title: Rate estimation and flow control of best effort traffic in heterogeneous networks

Author(s): Moorthy, R.N.; Jain, B.N.; Saran, H.

Author Affiliation: Dept. of Comput. Sci. & Eng., Indian Inst. of Technol., Delhi, India

Journal: Proceedings of the SPIE - The International Society for Optical Engineering Conference Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA) vol.3231 p.479-90

Publisher: SPIE-Int. Soc. Opt. Eng,

Publication Date: 1997 Country of Publication: USA

CODEN: PSISDG ISSN: 0277-786X

SICI: 0277-786X(1997)3231L.479:REFC;1-2

Material Identity Number: C574-97296

U.S. Copyright Clearance Center Code: 0277-786X/97/\$10.00

Conference Title: Performance and Control of Network Systems

Conference Sponsor: SPIE

Conference Date: 3-5 Nov. 1997 Conference Location: Dallas, TX, USA

Language: English

Copyright 1998, IEE

...Abstract: queuing. Although our scheme is presented in the context of a connection oriented network it is also applicable in a datagram network, such as the **Internet**. An important feature of the proposed scheme is that it requires no support from the underlying network and lower layers to indicate or control congestion...

... the mean spread of sets of uniformly spaced packets to estimate the available bandwidth at the bottleneck server (switch/router) along the path of a **connection**. This estimate of available bandwidth is then fed to a **controller** which adjusts the sending **rate** so as to maintain a certain number of packets buffered at the bottleneck server. The proposed rate estimation and control scheme is studied extensively using...

10/3,K/4 (Item 4 from file: 2)

DIALOG(R)File 2:INSPEC

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5763751 INSPEC Abstract Number: C9801-7250N-005

Title: WebQuery: searching and visualizing the Web through connectivity

Author(s): Carriere, S.J.; Kazman, R.

Author Affiliation: Software Eng. Inst., Carnegie Mellon Univ., Pittsburgh, PA, USA

Journal: Computer Networks and ISDN Systems vol.29, no.8-13 p. 1257-67

Publisher: Elsevier,

Publication Date: Sept. 1997 Country of Publication: Netherlands

CODEN: CNISE9 ISSN: 0169-7552

SICI: 0169-7552(199709)29:8/13L.1257:WSVT;1-4

Material Identity Number: I876-97008

U.S. Copyright Clearance Center Code: 0169-7552/97/\$17.00

Conference Title: Sixth International World Wide Web Conference

Language: English

Copyright 1997, IEE

Abstract: Finding information located somewhere on the **World Wide Web** is an error prone and frustrating task. The WebQuery system offers a powerful new method for searching the **Web** based on connectivity and content. We do this by examining links among the nodes returned in a keyword based query. We then **rank** the **nodes**, giving the highest **rank** to the most highly **connected nodes**. By doing so, we are finding "hot spots" on the **Web** that contain information germane to a user's query. WebQuery not only ranks and filters the results of a **Web** query, it also extends the result set beyond what the search engine retrieves, by finding "interesting" sites that are highly connected to those sites returned...

10/3,K/5 (Item 5 from file: 2)

DIALOG(R)File 2:INSPEC

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5483997 INSPEC Abstract Number: C9703-6150N-003

Title: Performance of hierarchical load sharing in heterogeneous distributed systems

Author(s): Lo, M.; Dandamudi, S.P.

Author Affiliation: Sch. of Comput. Sci., Carleton Univ., Ottawa, Ont., Canada

Conference Title: Proceedings of the ISCA International Conference. Parallel and Distributed Computing Systems Part vol.1 p.370-7 vol.1

Editor(s): Yetongnon, K.; Hariri, S.

Publisher: Int. Soc. Comput. & Their Appl.-ISCA, Raleigh, NC, USA

Publication Date: 1996 Country of Publication: USA 2 vol. x+825 pp.

Material Identity Number: XX96-02455

Conference Title: Proceedings of 9th International Conference on Parallel and Distributed Computing Systems. PDCS '96

Conference Sponsor: ISCA; IEEE Comput. Soc.; IEEE Tech. Committee on Operating Syst.; et al

Conference Date: 25-27 Sept. 1996 Conference Location: Dijon, France

Language: English

Copyright 1997, IEE

...Abstract: performance benefits of such a policy. In addition, the single coordinator causes fault-tolerance problems as the load distribution is dependent on this single coordinator **node**. Furthermore, in large **hierarchically** distributed networks (e.g., several **LAN** clusters **connected** by a WAN), consulting the central coordinator is expensive and leads to performance problems. The hierarchical policy minimizes these performance bottlenecks. We compare the performance...

10/3,K/6 (Item 6 from file: 2)

DIALOG(R)File 2:INSPEC

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4998703 INSPEC Abstract Number: B9508-6210L-110, C9508-5620W-016

Title: Risks and threats from Internet access: protecting the institution

Author(s): Kallman, E.A.

Author Affiliation: Bentley Coll., Waltham, MA, USA

Conference Title: Ethics in the Computer Age Conference Proceedings p. 33-8

Editor(s): Kizza, J.M.

Publisher: ACM, New York, NY, USA

Publication Date: 1994 Country of Publication: USA ix+210 pp.

ISBN: 0 89791 644 1

U.S. Copyright Clearance Center Code: 0 89791 644 1/94/0011/\$3.50

Conference Title: Proceedings of Ethics in the Computer Age

Conference Sponsor: ACM

Conference Date: 11-13 Nov. 1994 Conference Location: Gatlingburg, TN, USA

Language: English

Copyright 1995, IEE

Abstract: The **Internet** provides a number of capabilities to users. They can be divided into four general **categories** : Email-to virtually anyone on an **Internet node** ; Telnet-a direct **connection** to remote computers on the **Internet** , providing access to files, indices and other information resources at those locations; File Transfer Protocol (FTP)-a procedure which enables copying of files (documents, programs, pictures) between computing systems at different **Internet** locations; News Groups-thousands of electronic discussion groups through which messages are disseminated to subscribing users at **Internet** locations. Each of these categories poses some threat to the institution providing **Internet** access to users. Those responsible for this resource must understand the threats and take appropriate action to protect both the resource and the institution. At Bentley College, an **Internet** policy is in place, which along with other policies and practices meets these challenges.

10/3,K/7 (Item 7 from file: 2)
DIALOG(R)File 2:INSPEC
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4913480

Title: Barbarians at the gateway

Author(s): Lipner, S.B.

Author Affiliation: Trusted Inf. Syst. Inc., Glenwood, MD, USA

Journal: Business Communications Review vol.25, no.1 p.63-5

Publication Date: Jan. 1995 Country of Publication: USA

CODEN: BCORBD ISSN: 0162-3885

U.S. Copyright Clearance Center Code: 0162-3885/95/\$0.50

Language: English

Copyright 1995, IEE

Abstract: During the 1980s there were a series of intrusions of worldwide computer networks. The **Internet** "worm" was perhaps the most visible. In order to access computers that are connected to a corporate network, an intruder needs a minimum of two...

... if a security manager at headquarters knows what connections have been authorized at a corporate level, he or she could be blissfully unaware of the **connections** initiated by a **branch** or plant manager in **order** to "get the job done". Similarly, despite the hype about the **Internet** , an **Internet** access point is one of several potential points of entry.

10/3,K/8 (Item 8 from file: 2)
DIALOG(R)File 2:INSPEC
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4503459 INSPEC Abstract Number: B9311-6210L-139, C9311-5620L-062

Title: LANs connectivity via ISDN

Author(s): Lim, E.K.; Subramanian, K.R.; Koh, K.H.; Cheng, T.H.

Author Affiliation: Sch. of Electr. & Electron., Nanyang Technol. Univ., Singapore

Conference Title: Communications on the Move. Singapore. ICCS/ISITA '92(Cat. No.92TH0479-6) p.87-91 vol.1

Editor(s): Ng, C.S.; Yeo, T.S.; Yeo, S.P.

Publisher: IEEE, New York, NY, USA

Publication Date: 1990 Country of Publication: USA 3 vol. (xxvii+1422) pp.

ISBN: 0 7803 0803 4

Conference Sponsor: IEEE; Singapore Telecommn.; Telecommn.Authority Singapore; et al

Conference Date: 16-20 Nov. 1992 Conference Location: Singapore

Language: English

...Abstract: has increased due to the proliferation of LANs. One of the most efficient ways of network interconnection will be the use of the ISDN. A **LAN** /ISDN gateway is proposed to allow **LAN** users to establish

connection flexibly with LANs from different vendors, and also with ISDN **terminals**. In **order** to achieve this goal, a new addressing scheme, deriving from the hierarchical addressing technique, and the multiple-host assignment technique, is adopted.

10/3,K/9 (Item 9 from file: 2)

DIALOG(R)File 2:INSPEC

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4487248 INSPEC Abstract Number: B9311-6210L-013, C9311-5620L-003

Title: Internet design using parametric indices

Author(s): Harris, N.G.

Author Affiliation: Dept. of Electr. Eng., Univ. of the Witwatersrand, Johannesburg, South Africa

Journal: Transactions of the South African Institute of Electrical Engineers vol.84, no.1 p.16-20

Publication Date: March 1993 Country of Publication: South Africa

CODEN: TSAEA9 ISSN: 0038-2221

Language: English

Abstract: Internetworking standards have enabled designers of internets to use devices from multiple vendors. In the design of an **internet**, two of the major technical problems revolve around the optimum selection of links between nodes and the location of the root of the tree which spans the configuration. The tree and its root form a **hierarchy** of **branches** which **link** all **nodes** in an **internet** such that no loop paths exist between nodes. The author describes how an **internet** descriptor can be used to assess effects on performance and reliability of the location of the root and configuration of the tree in an **internet**. In the two design examples, **internet** trees are examined in terms of their compactness. **Internet** throughput, end-to-end transmission time, configuration balancing and cost are all directly related to the degree of compactness of the tree, as is shown.

10/3,K/10 (Item 10 from file: 2)

DIALOG(R)File 2:INSPEC

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04075525 INSPEC Abstract Number: B9203-6210L-015, C9203-5620L-009

Title: IVDLAN standardization and development

Author(s): Shimizu, H.; Watanabe, K.; Katsura, Y.; Tsuruta, K.; Abe, T.

Author Affiliation: Bus. Commun. Div., NEC Corp., Abiko, Japan

Journal: IEICE Transactions vol.E74, no.9 p.2696-702

Publication Date: Sept. 1991 Country of Publication: Japan

CODEN: IEITEF ISSN: 0917-1673

Language: English

...**Abstract:** providing person-to-person communication as well as improving office work efficiency, demands for multimedia communication services have increased. This paper discusses Integrated Voice/Data **LAN** (IVDLAN) for handling multimedia communications. First, the IEEE 802.9 IVDLAN working group activities on a user access network which dedicatedly provides a multi-megabit...

... IVDLAN product APEX 8000/10 which meets the IEEE 802.9 architecture. A set of an ISDN terminal and an IEEE 802.3 terminal are **connected** to the **node** through a **terminal** adapter. The line **rate** is 4.096 Mbit/s and the maximum line length is 600 m. The IVDLAN node has an 128 Mbit/s burst switching module and...

10/3,K/11 (Item 11 from file: 2)

DIALOG(R)File 2:INSPEC

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04064281 INSPEC Abstract Number: B9202-6210L-344, C9202-5620L-128

Title: LAN interconnect using X.25 network services
Author(s): Barrett, J.J.; Wunderlich, E.F.
Author Affiliation: AT&T Bell Lab., Holmdel, NJ, USA
Journal: IEEE Network vol.5, no.5 p.12-16
Publication Date: Sept. 1991 Country of Publication: USA
CODEN: IENEET ISSN: 0890-8044
U.S. Copyright Clearance Center Code: 0890-8044/91/0900-0012\$01.00
Language: English

Abstract: The use of X.25 for medium-speed applications (<56 kb/s) in personal computer **local area networks** (LANs) is considered, focusing on a number of popular **LAN**-based applications that are appropriately matched for X.25 services. For architectural reasons, they are broadly **classified** into two **categories**: PC-to-host access (**terminal** emulation), as in token ring, to synchronous data **link** control (SDLC) hosts using host gateways; and client-server applications, such as distributed databases that are bridged or routed. For each class of applications, the traffic characteristics are discussed, it is explained how an efficient interconnection can be accomplished, and some insight is provided into how **LAN** internetworking devices (routers and gateways) function in an X.25 environment.

10/3,K/12 (Item 12 from file: 2)

DIALOG(R)File 2:INSPEC

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03842555 INSPEC Abstract Number: B91019682, C91023015

Title: A framework for a national broadband (ATM/B-ISDN) network

Author(s): Eng, K.Y.; Gitlin, R.D.; Karol, M.J.
Author Affiliation: AT&T Bell Lab., Holmdel, NJ, USA
Conference Title: IEEE International Conference on Communications ICC '90 Including Supercomm Technical Sessions. SUPERCOMM ICC '90 Conference Record (Cat. No.90CH2829-0) p.515-20 vol.2
Publisher: IEEE, New York, NY, USA
Publication Date: 1990 Country of Publication: USA 4 vol. xxx+1759 pp.
U.S. Copyright Clearance Center Code: CH2829-0/90/0000-0515\$01.00
Conference Sponsor: IEEE; US Telephone Assoc.; Telecommun. Ind. Assoc
Conference Date: 16-19 April 1990 Conference Location: Atlanta, GA, USA
Language: English

...Abstract: to remain much faster than switching speeds (thus packet switching at peak transmission rates needs to be avoided), the network architecture is a three-tier **hierarchy** composed of LANs (**local area networks**), network **nodes** and DACS (digital access and cross-connect systems). Access to the network is either through direct connection to a DACS or network node, or through the end-user's **LAN**, which has a gateway to a network node. Each network node is a high-performance ATM packet switch, which accepts input cells at a B-ISDN rate of 150 Mb/s and serves both as **LAN**-to-**LAN** interconnect and as a packet concentrator for traffic destined to other network nodes and LANs. To minimize the delay and simplify the implementation of gigabit...

10/3,K/13 (Item 13 from file: 2)

DIALOG(R)File 2:INSPEC

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03524922 INSPEC Abstract Number: B90003254, C90007489

Title: Local networks: transmission lines

Author(s): Fonsatti, V.
Journal: Automazione e Strumentazione vol.37, no.7-8 p.131-6
Publication Date: July-Aug. 1989 Country of Publication: Italy
CODEN: ATSZAS ISSN: 0005-1284
Language: Italian

Abstract: The article sets forth the fundamental principles on which **local area networks (LAN)**, normally used in industrial automation systems, are based. Explanations are also given of **connection** systems **linking** together several programmable logic units, programming and supervision **processors**, peripherals, etc., with special reference to their **classification**, as they may work on three different systems: one way, half duplex and full duplex. Reference is also made to coding technology, by considering the...

10/3,K/14 (Item 14 from file: 2)
DIALOG(R)File 2:INSPEC
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03248629 INSPEC Abstract Number: C88063866

Title: Comparing parallel programming languages and architectures
Author(s): Mariani, J.A.
Author Affiliation: Dept. of Comput., Lancaster Univ., UK
Conference Title: IEE Workshop on Parallel Processing and Control - The Transputer and other Architectures (Digest No.95) p.2/1-8
Publisher: IEE, London, UK
Publication Date: 1988 Country of Publication: UK 136 pp.
Conference Sponsor: IEE
Conference Date: 4-6 July 1988 Conference Location: Bangor, UK
Language: English

...Abstract: passing. The situations of both (a) parallel processes running on the same machine; (b) parallel processes running on different machines/processors; the machines will be **linked** either by buses (in the case of tightly coupled **processors**) or **local area networks** are considered. In **order** that parallel processes can cooperate, there has to be a flow of information between them; there has to be a communications medium. In case (a...

... be a shared memory area where values can be read/written. In case (b), messages will have to be formed and sent along the bus/**local area network**.

10/3,K/15 (Item 15 from file: 2)
DIALOG(R)File 2:INSPEC
(c) 1999 Institution of Electrical Engineers. All rts. reserv.

03180489 INSPEC Abstract Number: C88046881

Title: Personal computer or terminal
Journal: Sysdata vol.19, no.5 p.21
Publication Date: May 1988 Country of Publication: Switzerland
CODEN: SYSDDS ISSN: 0254-2226
Language: German

...Abstract: stand-alone use, and more suited to inexperienced users, whereas an intelligent terminal is more demanding but can yield higher performance. Tandberg TDV 2411 intelligent **terminals** have been installed, **connected** to a **hierarchical** network employing optical fibre **local area networks**, local computers running Unix, PTT telecommunication links, and Honeywell satellite computers as well as a mainframe host computer.

10/3,K/16 (Item 16 from file: 2)
DIALOG(R)File 2:INSPEC
(c) 1999 Institution of Electrical Engineers. All rts. reserv.

03139088 INSPEC Abstract Number: B88035146, C88029911

Title: A multi-access protocol for local area networks with dynamic priorities and recovery mechanisms
Author(s): Kiesel, W.M.
Author Affiliation: Siemens AG, Erlangen, West Germany

Conference Title: EFOC/LAN 86 Proceedings. Papers Presented at: The Fourth Annual European Fibre Optic Communications and Local Area Networks Exposition p.183-91

Editor(s): Fasano, D.; Kennelly, C.; Polishuk, P.

Publisher: Inf. Gatekeepers, Boston, MA, USA

Publication Date: 1986 Country of Publication: USA xiv+344 pp.

Conference Date: 23-27 June 1986 Conference Location: Amsterdam, Netherlands

Language: English

Abstract: Reports on a **local area network** operating under a CSMA-CD-type protocol with dynamic **priorities** (CSMA-CD-DP). Peripheral devices, like **terminals**, host computers or other servers are **connected** to a common transmission channel through network access stations in a clustered manner. This concept reduces the number of network access stations and enhances the...

10/3,K/17 (Item 17 from file: 2)

DIALOG(R)File 2:INSPEC

(c) 1999 Institution of Electrical Engineers. All rts. reserv.

02778323 INSPEC Abstract Number: C87002828

Title: A simple bus local area network using collision-free access control

Author(s): Namekawa, H.; Aoki, M.; Kishigami, T.

Author Affiliation: Dept. of Inf. Sci., Ibaraki Univ., Hitachi, Japan

Journal: Journal of the Faculty of Engineering, Ibaraki University
no.33 p.193-204

Publication Date: 1985 Country of Publication: Japan

CODEN: IDKSAB ISSN: 0367-7389

Language: English

Abstract: Describes an implementation of a simple bus **local area network** which employs a distributed collision-free access control scheme. The control scheme uses control-wires in addition to a data bus to schedule the transmissions of each station. The stations with RS-232C interface can be **connected** easily to the network by using network **controllers**. The transmission **rate** of the network is 50 Kbit/sec. Details on the design of hardware and software for the network controllers are discussed.

10/3,K/18 (Item 18 from file: 2)

DIALOG(R)File 2:INSPEC

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02686474 INSPEC Abstract Number: C86034495

Title: An overview of MAP lower layer protocols

Author(s): Jayasumana, A.P.

Author Affiliation: Dept. of Electr. Eng., Colorado State Univ., Fort Collins, CO, USA

Conference Title: Proceedings of IECON '85. 1985 International Conference on Industrial Electronics, Control and Instrumentation (Cat. No.85CH2160-0) p.605-10 vol.2

Publisher: IEEE, New York, NY, USA

Publication Date: 1985 Country of Publication: USA 2 vol. 865 pp.

U.S. Copyright Clearance Center Code: CH2160-0/85/0000-0605\$01.00

Conference Sponsor: IEEE; Soc. Instrum. & Control Eng. Japan

Conference Date: 18-22 Nov. 1985 Conference Location: San Francisco, CA, USA

Language: English

Abstract: The Manufacturing Automation Protocol (MAP) is intended to establish a standard, based on the ISO-OSI reference model, for a factory **local-area network** to support communication among computers and other intelligent devices. The mechanical and electrical specifications of the IEEE 802.4 broadband token-passing standard are used...

... physical layer is responsible for encoding and physically transferring messages between adjacent nodes. The data link layer, which consists of

media access control and logical **link** control sublayers, improves the error **rate** for messages moved between adjacent **nodes** . The MAP task force has recommended the use of the IEEE 802.4 token-passing channel-access scheme and the IEEE 802.2 link-level...

10/3,K/19 (Item 19 from file: 2)

DIALOG(R)File 2:INSPEC

(c) 1999 Institution of Electrical Engineers. All rts. reserv.

02674478 INSPEC Abstract Number: B86037496, C86029573

Title: A packet-network support system for the MELCOM computer series

Author(s): Shinzawa, M.; Dosaka, S.; Fujimagari, H.; Yoshida, M.; Kurohata, Y.

Journal: Mitsubishi Denki Giho vol.59, no.11 p.57-61

Publication Date: 1985 Country of Publication: Japan

CODEN: MTDNAF ISSN: 0369-2302

Language: Japanese

Abstract: Mitsubishi Electric has developed a horizontally distributed network system based on the international standard X25 packet that provides equal **priority links** between MELCOM computers and **terminal** equipment. In addition to **linking** a digital-data-exchange packet network and nonswitched lines into a wide-area network, the system can also incorporate a MELNET, the Corporation's **local -area network** . The authors introduce the features of the packet-network system and the methods employed in developing its support equipment.

10/3,K/20 (Item 20 from file: 2)

DIALOG(R)File 2:INSPEC

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02658738 INSPEC Abstract Number: B86030436, C86024297

Title: The use of satellite channels for computer networking

Author(s): Burren, J.W.

Author Affiliation: Rutherford Appleton Lab., Chilton, UK

Conference Title: Satellite Transmissions. Proceedings of an International Symposium (ESA SP-245) p.71-8

Publisher: ESA, Noordwijk, Netherlands

Publication Date: 1985 Country of Publication: Netherlands vii+201 pp.

Conference Sponsor: ESA; Austrian Solar & Space Agency; Forschungsgesellschaft Joanneum Graz

Conference Date: 25-27 Sept. 1985 Conference Location: Graz, Austria

Language: English

...Abstract: and Project Universe in computer networking via satellite is reviewed. In these experiments a broadcast satellite channel was used to provide wide area communication between **local area networks** at the sites involved. The requirements for this 'backbone' network function will be described and the effectiveness of a satellite in this role will be...

... will be outlined. A new high performance controller based on the use of two microprocessor systems used in a parallel configuration, one for the up- **link** and one for the down-**link** , will be described. This **controller** uses variable **rate** block encoding and drives a new variable rate burst modem.

10/3,K/21 (Item 21 from file: 2)

DIALOG(R)File 2:INSPEC

(c) 1999 Institution of Electrical Engineers. All rts. reserv.

02585029 INSPEC Abstract Number: C86009149

Title: A comparison of receiver-initiated and sender-initiated adaptive load sharing

Author(s): Eager, D.L.; Lazowska, E.D.; Zahorjan, J.

Author Affiliation: Dept. of Comput. Sci., Saskatchewan Univ., Saskatoon, Sask., Canada

Journal: Performance Evaluation Review vol.13, no.2, spec. issue.
p.1-3

Publication Date: Aug. 1985 Country of Publication: USA

CODEN: PEREDN ISSN: 0163-5999

U.S. Copyright Clearance Center Code: 0-89791-169-5/85/007/0001\$00.75

Conference Title: Proceedings of the 1985 ACM SIGMETRICS Conference on Measurement and Modeling of Computer Systems

Conference Sponsor: ACM

Conference Date: 26-29 Aug. 1985 Conference Location: Austin, TX, USA

Language: English

Abstract: Summary form only given. The authors represent locally distributed systems as collections of identical nodes, each consisting of a single processor. The nodes are **connected** by a **local area network** (e.g., an Ethernet). All **nodes** are subjected to the same average arrival **rate** of tasks, which are of a single type. In contrast to most previous papers on load sharing, this paper represents the cost of task transfer...

10/3,K/22 (Item 22 from file: 2)

DIALOG(R)File 2:INSPEC

(c) 1999 Institution of Electrical Engineers. All rts. reserv.

02549025 INSPEC Abstract Number: B85063288, C85050277

Title: Centrenet-a high performance local area network

Author(s): Ibbett, R.N.; Edwards, D.A.; Hopkins, T.P.; Cadogan, C.K.; Train, D.A.

Author Affiliation: Dept. of Comput. Sci., Manchester Univ., UK

Journal: Computer Journal vol.28, no.3 p.231-42

Publication Date: July 1985 Country of Publication: UK

CODEN: CMPJA6 ISSN: 0010-4620

Language: English

Abstract: Centrenet is a high performance **local area network** designed to satisfy the requirements of both closely knit multi-computer systems and communities of users spread across large campus areas. It uses high speed parallel switching **nodes** arranged in a tree-structured **hierarchy** with **connections** between **nodes** being implemented in optical fibre. Within each node is a network intelligence module which assists in the setting up of virtual calls across the network...

10/3,K/23 (Item 23 from file: 2)

DIALOG(R)File 2:INSPEC

(c) 1999 Institution of Electrical Engineers. All rts. reserv.

02492603 INSPEC Abstract Number: C85037429

Title: Intel's Opennet

Author(s): Criegee, T.

Journal: Mikrocomputer Zeitschrift no.5 p.46-8

Publication Date: May 1985 Country of Publication: West Germany

CODEN: MDMZDL ISSN: 0720-4442

Language: German

Abstract: Points out that despite the potentialities of LANs (**Local Area Networks**) little has been done to realise international installations: and the reasons for this include the adoption of system-specific and externally incompatible solutions together with...

... a local station user to all files of the complete network, independent of the operation system: and by means of the setting-up of virtual **connections** between individual **junctions** of the total network, a quasi, new **hierarchic** network file system can be set up. The basis of the new system is the ISO 7-layer model first propounded by ISO with their...

10/3,K/24 (Item 24 from file: 2)
DIALOG(R)File 2:INSPEC
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02340301 INSPEC Abstract Number: B84058356, C84049692
Title: Bit-oriented coprocessor resolves incompatibilities of small and large networks

Author(s): Madan, P.; Huang, W.; Kao, C.; Yu, A.
Author Affiliation: Exel Microelectronics Inc., San Jose, CA, USA
Journal: Electronic Design vol.32, no.15 p.155-66
Publication Date: 26 July 1984 Country of Publication: USA
CODEN: ELODAW ISSN: 0013-4872
Language: English

Abstract: A VLSI component that serves both **local area networks** and **circle area networks** has to reconcile conflicting objectives. These have been met by a bit-oriented communications coprocessor. Fabricated with a two layer metal...

... in two versions-the XL88C585 and the XL68C565 and will be housed in a 48-pin package. The chip consists of two processors: a **data-link controller** that can operate at a higher data **rate** of 4 Mbits/s and a **channel processor** (with a built in DMA controller) that works at bus clock rates of up to 10 MHz.

10/3,K/25 (Item 25 from file: 2)
DIALOG(R)File 2:INSPEC
(c) 1999 Institution of Electrical Engineers. All rts. reserv.

02241250 INSPEC Abstract Number: B84026560, C84021975
Title: A new CSMA-CD protocol for local area networks with dynamic priorities and low collision probability

Author(s): Kiesel, W.M.; Kuehn, P.J.
Author Affiliation: Dept. of Communications, Univ. of Siegen, Siegen, West Germany
Journal: IEEE Journal on Selected Areas in Communications vol.SAC-1, no.5 p.869-76
Publication Date: Nov. 1983 Country of Publication: USA
CODEN: ISACEM ISSN: 0733-8716
U.S. Copyright Clearance Center Code: 0733-8716/83/1100-0869\$01.00
Language: English

Abstract: This paper reports on the implementation of a **local area network (LAN)** operating under a new CSMA-CD protocol with **dynamic priorities (CSMA-CD-DP)**. User **terminals**, host computers, and other servers are **connected** to a common broad-band channel through N network access stations in a clustered manner. This concept reduces the number of network access stations and...

10/3,K/26 (Item 1 from file: 6)
DIALOG(R)File 6:NTIS
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2014980 NTIS Accession Number: AD-A326 116/1
Algorithms and Software for Combined H2/Hoo Control
(Final rept. 1 Apr 96-31 Mar 97)
Watson, L. T.
Virginia Polytechnic Inst. and State Univ., Blacksburg. Dept. of Computer Science.
Corp. Source Codes: 032784044; 411098
Report No.: AFOSR-TR-97-0191
26 Apr 97 87p
Languages: English
Journal Announcement: GRAI9721
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fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

NTIS Prices: PC A06/MF A01

This objective of this project were (1) to prove convergence theorems for probability-one homotopy methods applied to H2 and **combined** H2/H to infinity optimal model **order** reduction and **controller** synthesis problems, and (2) to develop a robust, fixed-structure MATLAB toolbox. This report consist of a paper on convergence theory for homotopy control algorithms, and a user's guide for a MATLAB toolbox. The toolbox is available on the **World Wide Web** at URL <http://www.cs.vt.edu/ltw/toolbox/>.

10/3,K/27 (Item 2 from file: 6)

DIALOG(R)File 6:NTIS

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1672558 NTIS Accession Number: AD-P007 620/8

Application of Ultrafast Gates to a Soliton Ring Network

Soccolich, C. E. ; Islam, M. N. ; Hong, B. J. ; Chbat, M. ; Sauer, J. R.

A.T. and T. Bell Labs., Holmdel, NJ.

Corp. Source Codes: 092566000; 416667

22 May 92 4p

Languages: English

Journal Announcement: GRAI9222

This article is from 'OSA Proceedings of the Topical Meeting on Nonlinear Guided-Wave Phenomena Held in 2-4 September 1991. Cambridge, England United Kingdom. Volume 15', AD-A253 471, p366-369.

Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

NTIS Prices: PC A01/MF A01

Descriptors: Solitons; *Optical circuits; *Optical communications; *Logic circuits; Data **rate** ; **Nodes** ; Packet switching; Rings; Routing; **Local area networks** ; Data **links** ; Fiber optics; Transmission lines

10/3,K/28 (Item 3 from file: 6)

DIALOG(R)File 6:NTIS

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1252982 NTIS Accession Number: PB86-202595

Characterization of Traffic on NBSNET

(Final rept)

Stokesberry, D. P.

National Bureau of Standards, Gaithersburg, MD. Systems and Network Architecture Div.

Corp. Source Codes: 081914009

1984 40p

Languages: English Document Type: Journal article

Journal Announcement: GRAI8619

Pub. in Proceedings of a Workshop on Performance and Evaluation of Local Area Networks, Worcester, Massachusetts, March 24-25, 1983, p63-102 1984.

NTIS Prices: Not available NTIS

The paper analyzes the traffic on a **local area network** in its third year of operation at the National Bureau of Standards. NBSNET is a one megabit per second broadcast network that uses a carrier sense multiple access with collision detection (CSMA/CD) protocol. It is approximately four kilometers in length. The network has over 250 user devices **connected** to it; these devices fall into six different **categories** -- main computer, minicomputer, microcomputer, word **processor** , graphics **terminal** and ordinary terminal. Over 2 million packets were observed during 39 data collection runs. One fourth of the packets and one third of the data...

10/3,K/29 (Item 1 from file: 233)
DIALOG(R)File 233:Microcomputer Abstracts
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00364526 94DC10-103

LAN connectivity -- Vendors are focusing on products that integrate LAN and SNA traffic

Data Communications , October 21, 1994 , v23 n15 p61-82, 21 Page(s)
ISSN: 0363-6399

Introduces a buyer's guide to **LAN connectivity** products. Features capsule descriptions of products in the following **categories** : gateways and **controllers** ; fax gateways; **terminal** emulators and host access software; **LAN Internet** access; channel extenders with **LAN** connectivity; host-to-**LAN** print connectivity; WAN access software; terminal servers; and SLDC converters. Includes a product trend report and pricing information. Includes a diagram. (dpm)

10/3,K/30 (Item 2 from file: 233)
DIALOG(R)File 233:Microcomputer Abstracts
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00348252 94IW05-419

Relay/PC Gold for Windows version 6.0

Rash, Wayne; Garza, Victor R; Marcus, Ann M
InfoWorld , May 30, 1994 , v16 n22 p77, 79, 81+, 5 Page(s)
ISSN: 0199-6649
Company Name: Relay Technology
Product Name: Relay/PC Gold for Windows

... of Vienna, VA (800, 703). Runs on IBM PC compatibles with 5MB hard disk space and Windows. Rates Relay/PC Gold as excellent in the **categories** of: **terminal** emulation, covering nearly every major **terminal** available; scripting, and **connectivity** and reliability, calling it particularly robust in maintaining connections despite interruptions; network access. Also claims that Relay/PC Gold has the most complete documentation of any of the tested packages. Further notes that this program is highly customizable; it provides support for over 150 modems, as well as for **LAN** communications and a variety of other mainframe access options, including 3270 coaxial adapters; and technical support is very good. However, says Relay/PC Gold cannot...

10/3,K/31 (Item 1 from file: 103)
DIALOG(R)File 103:Energy SciTec
(c) 1999 Contains copyrighted material. All rts. reserv.

04287912 JP-97-0H0731; EDB-98-048327

Title: Bulb turbine-generators for Bailongtan power plant, China

Original Title: Chugoku Bailongtan hatsudenshomuke daiyoryo bulb suisha hatsudenki

Author(s): Takahashi, M.; Yoshii, K.; Kawaji, T. (Fuji Electric Co. Ltd., Tokyo (Japan))

Source: Fuji Jiho (Fuji Electric Journal) v 70:9. Coden: FUJIAS ISSN: 0367-3332

Publication Date: 10 Sep 1997 p 37-41

Language: Japanese

...Abstract: bearing supporting system employed the dual-bearing overhang system. The generator cooling system used a double shell cooling system. The control equipment consists of a **hierarchical** control system using a unit **controller** and a master station, which are **linked** together with **LAN** using optical fiber cables. 14 figs., 1 tab.

10/3,K/32 (Item 1 from file: 94)
DIALOG(R)File 94:JICST-EPlus
(c)1999 Japan Science and Tech Corp(JST). All rts. reserv.

01580042 JICST ACCESSION NUMBER: 92A0212078 FILE SEGMENT: JICST-E
Special issue : with the aim of upgrading of metal-mold making.
Communication network which realizes efficiency upgrading of metal-mold machining.

SORIMACHI MASAYUKI (1); TACHIKAWA NOBUYOSHI (1); HATANAKA TOORU (1)
(1) Dikonjapan
Kikai to Kogu(Tool Engineer), 1992, VOL.36,NO.3, PAGE.52-57, FIG.4, TBL.1
JOURNAL NUMBER: G0120AAZ ISSN NO: 0387-1053
UNIVERSAL DECIMAL CLASSIFICATION: 621:658.566.01
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Commentary
MEDIA TYPE: Printed Publication

...ABSTRACT: ITS2000 with coaxial cable, it is possible to connect up to 255 units including the server. Each of the following items is explained : network, server, **terminal** unit, example of use, **connection** with higher-order **LAN** , and, development of tool management system by the network.

10/3,K/33 (Item 2 from file: 94)
DIALOG(R)File 94:JICST-EPlus
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01437096 JICST ACCESSION NUMBER: 91A0810677 FILE SEGMENT: JICST-E
Special Issue on LAN: High Speed, Multimedia, and Reliability. IVDLAN Standardization and Development.

SHIMIZU H (1); WATANABE K (2); KATSURA Y (3); TSURUTA K (4); ABE T (5)
(1) NEC Corp., Abiko-shi, JPN; (2) NEC Research Inst. Inc., New Jersey, USA ; (3) NEC America, Inc., New York, USA; (4)NEC Engineering, Ltd., Abiko-shi, JPN; (5) NEC Communications Systems, Ltd., Abiko-shi, JPN
IEICE Trans(Inst Electron Inf Commun Eng), 1991, VOL.E74,NO.9, PAGE.2696-2702, FIG.9, REF.13
JOURNAL NUMBER: F0699BCQ ISSN NO: 0917-1673
UNIVERSAL DECIMAL CLASSIFICATION: 681.3:654
LANGUAGE: English COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Original paper
MEDIA TYPE: Printed Publication

...ABSTRACT: providing person-to-person communication as well as improving office work efficiency, demands for multimedia communication services have increased. This paper discusses Integrated Voice/Data **LAN** (IVDLAN) for handling multimedia communications. First, the IEEE 802.9 IVDLAN working group activities on a user access network which dedicatedly provides a multi-megabit...

...IVDLAN product APEX 8000/10 which meets the IEEE 802.9 architecture. A set of an ISDN terminal and an IEEE 802.3 terminal are **connected** to the **node** through a **terminal** adapter. The line **rate** is 4.096Mbit/s and the maximum line length is 600m. The IVDLAN node has an 128Mbit/s burst switching module and a 64Mbit/s...

10/3,K/34 (Item 1 from file: 99)
DIALOG(R)File 99:Wilson Appl. Sci & Tech Abs
(c) 1999 The HW Wilson Co. All rts. reserv.

1747547 H.W. WILSON RECORD NUMBER: BAST89005369
Air Force selects Computer Sciences Corp. to develop information processing system
Aviation Week & Space Technology v. 130 (Jan. 23 '89) p. 51-2
DOCUMENT TYPE: Feature Article ISSN: 0005-2175

...ABSTRACT: and deploy the entire IPS network by 1994. The nodes will be linked into MAC's Global Decision Support System (GDSS), a series of seven **local area networks** that automates the tracking of MAC aircraft and crew, though not data entry. In order to prevent operators from gaining access to **classified** information in the higher-level GDSS **nodes** once the IPS nodes are **linked** into the system, the Defense Department plans to use the GDSS system as the basis for developing a prototypical security system.

File 275:Computer Database(TM) 1983-1999/Jun 10
(c) 1999 The Gale Group
File 674:Computer News Fulltext 1989-1999/May W5
(c) 1999 IDG Communications
File 16:PROMT(R) 1972-1999/Jun 10
(c) 1999 The Gale Group
File 15:ABI/INFORM(R) 1971-1999/Jun 09
(c) 1999 UMI
File 148:Trade & Industry Database 1976-1999/Jun 10
(c) 1999 The Gale Group
File 636:Newsletter DB(TM) 1987-1999/Jun 10
(c) 1999 The Gale Group
File 624:McGraw-Hill Publications 1985-1999/Jun 08
(c) 1999 McGraw-Hill Co. Inc
File 9:Business & Industry(R) Jul 1994-1999/Jun 10
(c) 1999 Resp. DB Svcs.
File 88:BUSINESS A.R.T.S. 1976-1999/Jun 10
(c) 1999 The Gale Group
File 47:Magazine Database(TM) 1959-1999/Jun 10
(c) 1999 The Gale group
File 75:Management Contents(R) 86-1999/May W5
(c) 1999 The Gale Group
File 647:CMP Computer Fulltext 1988-1999/May W5
(c) 1999 CMP

Set	Items	Description
S1	1648854	CATEGORI? OR RANK OR PRIORIT? OR HIERARCH? OR CLASSIF?
S2	2075146	NODE? ? OR PROCESSOR? ? OR CONTROLLER? ? OR TERMINAL? ? OR BRANCH?? ? OR JUNCTION?
S3	4373866	LINK? OR CONNECT? OR JOIN OR COMBINE? OR BACK()LINK? OR BA- CKLINK?
S4	1306296	DATABASE? OR DATABANK? OR DATA() (BASE? OR BANK?)
S5	2176570	INTERNET OR INTRANET OR LAN OR WORLD()WIDE()WEB OR WEB OR - LOCAL()AREA()NETWORK?
S6	4560528	CITATION? OR DOCUMENT? OR REPORT? ?
S7	2140	WEIGHTED(7N)SUM
S8	2	(S1(5N)S2) (S) (S3(5N)S4) (S)S5
S9	163	(S1(5N)S2) (S)S3(S)S5
S10	163	S1(5N)S2(5N)S3(5N)S5
S11	5219	S1(3N)S2
S12	196	S11(5N)S3
S13	0	S12(5N)S5
S14	9	S12(S)S5
S15	7	RD (unique items)

15/3,K/1 (Item 1 from file: 275)
DIALOG(R) File 275:Computer Database(TM)
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01599591 SUPPLIER NUMBER: 13749196 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Multiprotocol routers: an overview. (Cover Story) (Buyers Guide)
Flanagan, Patrick
Telecommunications, v27, n4, p19(4)
April, 1993
DOCUMENT TYPE: Buyers Guide ISSN: 0278-4831 LANGUAGE: ENGLISH
RECORD TYPE: FULLTEXT; ABSTRACT
WORD COUNT: 2859 LINE COUNT: 00228

... Wellfleet's line can go as high as \$180,000 for a fully loaded box.
At the mid and low ends, Wellfleet offers three product **categories**.
The **Link Node** is an expandable platform for small to medium-sized
network sites and supports up to 16 **LAN** and 16 WAN connections through
four expansion processors. The Feeder Node is for small network sites with
limited growth and allows a maximum of two **LAN** and two WAN connections.
For remote offices, the Access Feeder Node is a packaged solution offering
one Ethernet connection and two synchronous connections. The lowest...

15/3,K/2 (Item 2 from file: 275)
DIALOG(R) File 275:Computer Database(TM)
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01167979 SUPPLIER NUMBER: 05069865
Northern 'wiring up': joins IBM, others, in premised cabling arena.
(Northern Telecom Inc)
Feldman, Robert
MIS Week, v7, n51, p1(2)
Dec 22, 1986
ISSN: 0199-8838 LANGUAGE: ENGLISH RECORD TYPE: ABSTRACT

...ABSTRACT: 1987, Northern Telecom Inc will introduce its Integrated
Building Distribution Network (IBDN) 'universal' system for wiring new
buildings or rewiring old ones. IBDN offers a **hierarchical** star topology
of **nodes** and **links**, integrates twisted copper and fiber-optic wire, and
will work on already installed 24-gauge twisted copper wiring, offers a low
cost of \$250 to...

...IBDN will also support 20MB-per-second Ethernet systems with fiber-optic
cable and Northern Telecom's own long-promised Meridian 2.56MB-per-second
local area network up to 2,000 feet. IBDN will be sold directly to
national accounts and through Northern Telecom distributors.

15/3,K/3 (Item 1 from file: 16)
DIALOG(R) File 16:PROMT(R)
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01530230
Northern 'wiring up'.
MIS WEEK December 22, 1986 p. 1,16

... Building Distributing Network (IBDN) in 2/87. IBDN will introduce a
'universal' system for wiring new buildings and rewiring old ones. In IBDN,
nodes and **links** are arranged in a **hierarchical** star topology. **Nodes**
serve as the network interfaces to a telephone company or as access points
for such devices as PBXs, multiplexers, **LAN** interface units, terminals,
micros, minis and mainframe terminal controllers. Northern Telecom will
also introduce its Meridian system in 1987. Meridian runs a
2.56-Mbps-to-the-terminal **LAN** on an integrated voice/data system that
uses twin 40 Mbps buses. The firm will also introduce its packet transport
equipment in 1987. Article discusses...

15/3,K/4 (Item 1 from file: 15)

DIALOG(R)File 15:ABI/INFORM(R)

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01363069

00-14056

Information technology in manufacturing

Anonymous

Manufacturing Systems v14n12 PP: 54-78 Dec 1996

ISSN: 0748-948X JRNL CODE: MFS

WORD COUNT: 9210

...TEXT: operating systems and applications-can communicate with one another. HyperText Markup Language (HTML) lets the computers display the accessed information in graphical pages.

Originally, the **Internet** was a scheme sponsored by the U.S. Defense Department to link its labs with American universities in an ingenious and robust way. Instead of **connecting** computers in a **hierarchical**, trunk-and-**branch** fashion-e.g., as with a city's electric or water-supply network-the **Internet** ties computers together in a decentralized system, analogous to a grid of streets crisscrossing a city. As a message leaves a computer in, say, Boston...

15/3,K/5 (Item 2 from file: 15)

DIALOG(R)File 15:ABI/INFORM(R)

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01193264

98-42659

Sun study finds the 'Net saves money

Rendleman, John

CommunicationsWeek n599 PP: 5 Mar 4, 1996

ISSN: 0746-8121 JRNL CODE: CWE

ABSTRACT: Companies that use the **Internet** as a corporate data network can save 23% to 50% of the cost of operating a traditional leased private-line network, according to a recent...

... Microsystems Inc. The estimated savings are for a typical 10-node corporate data network and account for both high-priority corporate backbone networks and lower-**priority** networks **connecting** **branch** offices. ...

15/3,K/6 (Item 3 from file: 15)

DIALOG(R)File 15:ABI/INFORM(R)

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00334930

86-35344

Charting Their Courses

Haugdahl, J. Scott

Computerworld v20n37A PP: 18-22 Sep 17, 1986

ISSN: 0010-4841 JRNL CODE: COW

...ABSTRACT: forth with its Cabling System and the Token-Ring Network. AT&T's PDS is a multifunctional distribution system, and ISN's architecture consists of **nodes** and concentrators **hierarchically** **connected** by trunks. IBM's access control technique is distributed, while AT&T's is more centralized. AT&T does have a distributed type of **LAN** for personal computers and low-end 3B computers -- Starlan. As IBM's announced host attachments become available, the System/36 will be supported on the...

15/3,K/7 (Item 1 from file: 148)

DIALOG(R)File 148:Trade & Industry Database

(c) 1999 The Gale Group. All rts. reserv.

03881704 SUPPLIER NUMBER: 07079790 (USE FORMAT 7 OR 9 FOR FULL TEXT)

Spreadsheet will comply with CALS. (Computer-Aided Acquisition Logistics and Support) (product announcement)

Hosinski, Joan M.

Government Computer News, v8, n4, p1(2)

Feb 20, 1989

DOCUMENT TYPE: product announcement ISSN: 0738-4300 LANGUAGE:

ENGLISH RECORD TYPE: FULLTEXT; ABSTRACT

WORD COUNT: 642 LINE COUNT: 00050

...ABSTRACT: in ascending or descending order. System Industries Inc introduces the SI2480 (\$85,000 to 250,000), an IBM 3480-compatible cartridge tape drive that can **connect** to DEC's **Hierarchical Storage Controller** 50 and HSC70 controllers used on VAXclusters. CC:Mail Inc introduces a gateway (\$2,500 to \$3,000) that allows cc:Mail **local area network** users to send or receive files transparently from Apple Computer Inc Macintoshes, Personal Computers and VAXes.

File 348:European Patents 1978-1999/Jun W22
(c) 1999 European Patent Office

Set	Items	Description
S1	395325	CATEGORI? OR RANK OR PRIORIT? OR RATE OR HIERARCH? OR ORDER OR CLASSIF?
S2	210332	NODE? ? OR PROCESSOR? ? OR CONTROLLER? ? OR TERMINAL? ? OR BRANCH?? ? OR JUNCTION?
S3	425852	LINK? OR CONNECT? OR JOIN OR COMBINE? OR BACK()LINK? OR BA- CKLINK?
S4	16427	DATABASE? OR DATABANK? OR DATA() (BASE? OR BANK?) OR LIBRARY
S5	29546	INTERNET OR INTRANET OR LAN OR WORLD()WIDE()WEB OR WEB OR - LOCAL()AREA()NETWORK?
S6	707844	CITATION? OR DOCUMENT? OR REPORT? ?
S7	946	WEIGHTED(7N)SUM
S8	2975	(S1(7N)S2) (10N)S3
S9	49	S8(S)S5
S10	2	S9(S)S4
S11	19	S9 AND S4
S12	0	NODE?(S)RANK?(S)LINK?(S)DATABASE?
S13	71	NODE? AND RANK? AND LINK? AND DATABASE?
S14	211	NODE? AND RANK? AND (LINK? OR BACKLINK? OR BACK()LINK?)
S15	140	S14 NOT S13
S16	0	NODE?(S)RANK?(S)LINK?(S)S5
S17	17	NODE?(S)RANK?(S)LINK?

17/5,K/1

DIALOG(R)File 348:European Patents
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00999299

ORDER fax of complete patent from Dialog SourceOne. See HELP ORDER 348

A method and system for suggesting related documents
Ein Verfahren und System um ähnliche Dokumente vorzuschlagen
Un procede et systeme pour proposer des documents relies

PATENT ASSIGNEE:

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PATENT (CC, No, Kind, Date): EP 902380 A2 990317 (Basic)

APPLICATION (CC, No, Date): EP 98307343 980910;

PRIORITY (CC, No, Date): US 929426 970915

DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI;
LU; MC; NL; PT; SE

INTERNATIONAL PATENT CLASS: G06F-017/30;

ABSTRACT EP 902380 A2

The document reading system passively analyzes a document to generate margin or end notes of references to other documents that relate to annotated passages in the document or to the entire document. The invention is responsive to the annotation of a document to passively generate a query that retrieves documents that have similar content to the annotated passage. The retrieved documents are available to the reader through selectable links placed in the margin near the annotation. Additionally, the invention provides end notes with links to documents that are similar in content to the overall content of the annotated document. The invention assists the reader by passively generating selectable links to related documents to assist the user in relating the new document to previously read material.

ABSTRACT WORD COUNT: 126

LEGAL STATUS (Type, Pub Date, Kind, Text):

Application: 990317 A2 Published application (Alwith Search Report
;A2without Search Report)

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	9911	463
SPEC A	(English)	9911	2587
Total word count - document A			3050
Total word count - document B			0
Total word count - documents A + B			3050

ORDER fax of complete patent from Dialog SourceOne. See HELP ORDER 348

...SPECIFICATION Furuta et al. Proceedings of Hypertext '89, November 1989, Pittsburgh, PA, ACM Press, incorporated herein by reference in its entirety.

The HieNet System uses inter-**node** similarity measures to create hypertext **links** based on **links** previously created by the hypertext author. This system is described in "Hienet: A User-Centered Approach for Automatic **Link** Generation", D.T. Chang, Proceedings of Hypertext '93, November 1993, Seattle, WA, ACM Press, incorporated herein by reference

in its entirety. When the author creates a **link** from a document A to a document B, the system automatically adds **links** from all documents similar to document A to all documents similar to document B. Anchors for these automatically-generated **links** are represented by icons in the margin of the various documents. Clicking on an icon displays a pop-up menu that contains a list of possible destination documents that are **ranked** by relevance to the query. Again, this system relies on **links** previously created by the author.

Other conventional systems relate to hypertext-like ways of displaying search results. HieNet displays automatic links in the margin, but...

17/5,K/2

DIALOG(R)File 348:European Patents

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00914404

ORDER fax of complete patent from Dialog SourceOne. See HELP ORDER 348

Hyper-text document preparing apparatus

Hypertext-Dokumentaustellungssystem

Systeme de preparation de documents hypertextes

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AT;BE;CH;DE;DK;ES;FI;FR;GB;GR;IE;IT;LI;LU;MC;NL;PT;SE)

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Nakanishi, Yoshiaki, 2-4-10-305, Matsunoki, Suginami-ku, Tokyo, (JP)

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PATENT (CC, No, Kind, Date): EP 834820 A2 980408 (Basic)

EP 834820 A3 990414

APPLICATION (CC, No, Date): EP 97116976 970930;

PRIORITY (CC, No, Date): JP 96261515 961002

DESIGNATED STATES: AT; BE; CH; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU;

MC; NL; PT; SE

INTERNATIONAL PATENT CLASS: G06F-017/30;

ABSTRACT EP 834820 A2

Contents of each of nodes indicating a plurality of hyper-text documents are prepared and revised in a node managing unit as node information. A connection-relationship between two nodes is established and revised for each of the nodes in a hierarchy structure managing unit as hierarchy structure information, and a hierarchy structure of the nodes is established. In this hierarchy structure, one node ranked to the top level is set as a parent node, and the other nodes are set to child nodes. Thereafter, a plurality of hyper-text documents arranged in the hierarchy structure are prepared from the node information and the hierarchy structure information. Therefore, because the contents of each node is managed in dependence of the preparation of the hierarchy structure, the hyper-text documents arranged in the hierarchy structure can be easily prepared.

ABSTRACT WORD COUNT: 135

LEGAL STATUS (Type, Pub Date, Kind, Text):

Application: 980408 A2 Published application (Alwith Search Report ;A2without Search Report)

Examination: 980408 A2 Date of filing of request for examination: 970930

Search Report: 990414 A3 Separate publication of the European or International search report

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text Language Update Word Count

CLAIMS A (English) 9815 1483

SPEC A	(English)	9815	9880
Total word count - document A			11363
Total word count - document B			0
Total word count - documents A + B			11363

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...SPECIFICATION production information shown in Fig. 12 is produced in the link information automatic producing unit;

Fig. 14 shows an example of a hierarchy structure of **nodes** and **link** automatic production information determined in cases where a user selects connection type information "jtype **Headline** and **Ranking**";

Fig. 15 shows a plurality of hyper-text documents indicated by hyper-text expression information obtained in cases where the link automatic production information shown in Fig. 14 is produced in the link information automatic producing unit;

Fig. 16 shows an example of a hierarchy structure of **nodes** and **link** automatic production information determined in cases where a user selects connection type information "jtype **Ranking**";

Fig. 17 shows a plurality of hyper-text documents indicated by hyper-text expression information obtained in cases where the link automatic production information shown...the user can refer to any one among the child nodes as a referential node.

Fig. 14 shows an example of a hierarchy structure of **nodes** and **link** automatic production information determined in cases where a user selects connection type information "jtype **Headline** and **Ranking**", and Fig. 15 shows a plurality of hyper-text documents indicated by hyper-text expression information of the hyper-text document preparing unit 35 obtained in cases where the **link** automatic production information shown in Fig. 14 is produced in the **link** information automatic producing unit 34.

As shown in Fig. 14, when a user selects connection type information "jtype **Headline** and **Ranking**" on condition that node...the hyper-text document preparing unit 35.

Accordingly, the user can easily obtain the hierarchy structure of the group of hyper-text documents in which **linking** relationships among the hyper-text documents are automatically prepared by selecting the connection type information "jtype **Headline** and **Ranking**". Also, in cases where the user selects connection type information "jtype **Headline** and **Ranking**" displayed on the displaying unit 19 by inputting a **link** automatic production information selecting instruction to the receiving unit 33, when the user selects one child **node** listed in the index information, the user can refer to any one among the child **nodes** as a referential **node**, and the user can refer to the other child **nodes** one after another.

Fig. 16 shows an example of a hierarchy structure of **nodes** and **link** automatic production information determined in cases where a user selects connection type information "jtype **Ranking**", and Fig. 17 shows a plurality of hyper-text documents indicated by hyper-text expression information of the hyper-text document preparing unit 35 obtained in cases where the **link** automatic production information shown in Fig. 16 is produced in the **link** information automatic producing unit 34.

As shown in Fig. 16, when a user selects connection type information "jtype **Ranking**" on condition that node information of...

...the hyper-text document preparing unit 35.

Accordingly, the user can easily obtain the hierarchy structure of the group of hyper-text documents in which **linking** relationships among the hyper-text documents are automatically prepared by selecting the connection type information "jtype **Ranking**". Also, in cases where the user selects connection type information "jtype **Ranking**" displayed on the displaying unit 19, the user can refer to the **nodes** one after another in the **ranking** order.

(Third Embodiment)

Fig. 18 is a block diagram of a hyper-text document preparing apparatus according to a third embodiment of the present invention...

- ...CLAIMS produced by the hierarchy structure managing means and the link information.
4. A hyper-text document preparing apparatus according to claim 3 in which one **node ranked** to the top level in the hierarchy structure is classified as a parent **node** in the hierarchy structure managing means, the other **nodes** are classified as child **nodes** in the hierarchy structure managing means, each piece of **link** automatic production information is composed of the connection type information indicating a connection-relationship between the parent **node** and a group of child **nodes**, an index template indicating a list of child **nodes**, an index producing rule indicating the number of child **nodes** existing in the list, a function button template indicating a list of function buttons respectively indicating a **linking** relationship, and a function button producing rule indicating one or more types of function buttons allocated to each child **node**, the anchor information allocated to the parent **node** is the list of child **nodes**, and the anchor information allocated to each child **node** is one or more types of function buttons.
 5. A hyper-text document preparing apparatus according to claim 3 in which each piece of **node** information produced by the **node** managing means includes title information indicating a title of a **node** corresponding to the **node** information, one **node ranked** to the top level in the hierarchy structure is classified as a parent **node** in the hierarchy structure managing means, the other **nodes** are classified as child **nodes** in the hierarchy structure managing means, the anchor information allocated to the parent **node** is an index of one or more titles of child **nodes linked** to the parent **node** in the **linking** relationships, and the title information of the child **nodes linked** to the parent **node** are attached to the child **nodes** by the **link** information automatic producing means.
 6. A hyper-text document preparing apparatus according to claim 5 in which an index information changing instruction indicating a change ...

17/5,K/3

DIALOG(R)File 348:European Patents
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00885411

ORDER fax of complete patent from Dialog SourceOne. See HELP ORDER 348
Method for sequencing computer instruction execution in a data processing system

Verfahren zum Bestimmen der Ausführungsreihenfolge von Rechnerbefehlen in einem Datenverarbeitungssystem

Methode pour determiner la sequence d'execution d'instructions dans un systeme de traitement de donnees

PATENT ASSIGNEE:

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PATENT (CC, No, Kind, Date): EP 810523 A2 971203 (Basic)

APPLICATION (CC, No, Date): EP 97107004 970428;

PRIORITY (CC, No, Date): US 647863 960515

DESIGNATED STATES: DE; FR; GB; IT

INTERNATIONAL PATENT CLASS: G06F-009/45;

ABSTRACT EP 810523 A2

A method and apparatus for sequencing computer instructions in memory (24) to provide for more instruction efficient execution by a central processing unit (CPU) (22) begins by executing the computer instructions via the CPU (22) and creating a trace file (FIG. 2) in memory (24). The

trace file is then scanned using a window size greater than two (i.e., more than two instructions or basic blocks/ groups of instructions are selected as each window) and correlations are determined between several pairs of instructions in each window (FIGs. 9 and 10). The correlations obtained by the window procedure are then analyzed (FIG. 11) to determine an efficient ordering of computer instructions for subsequent execution by any target CPU.

ABSTRACT WORD COUNT: 118

LEGAL STATUS (Type, Pub Date, Kind, Text):

Application: 971203 A2 Published application (Alwith Search Report
;A2without Search Report)
Change: 980114 A2 Representative (change)
Withdrawal: 990317 A2 Date on which the European patent application
was withdrawn: 990118

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	9711W4	1255
SPEC A	(English)	9711W4	19949
Total word count - document A			21204
Total word count - document B			0
Total word count - documents A + B			21204

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...SPECIFICATION in Step 1576. Otherwise, the edge is an SESE/SEZE chain and the method continues with Step 1578.

Step 1578 starts a walk down each **link** L in the SESE/SEZE chain. What has to be done first is to carry out the analysis for all Superedges internal to the **link** L. In Step 1580, the next Superedge e is selected from **link** L. The method of FIG. 38 is then invoked (recursively) on this edge in step 1582, resulting in an evaluation of the primary P(e) and secondary S(e) **node** chains for Superedge e. In Step 1584, if another Superedge is available, the method repeats the invocation as described starting with Step 1580, while if...

...the method continues with Step 1586. By the time Step 1586 has been evaluated, every Superedge e in L has had its primary and secondary **node** chains determined. In Step 1586, the best primary path from input to output is found using the method described in FIG. 39. This primary path ...

...the first, the basic block which is entered by the incoming edge to L has no back edge entering it. In this case, the first **node** to be added is determined by the CTR values relating the alternatives to the previous **nodes**. Specifically, if **links** corresponding to index values i1 and i2 have already been added to the chain, the index value i3 is that corresponding to the current **link**, and index values corresponding to the remaining **links** are i4 and i5, the **rank** for each candidate **node** i3 would be where the sum is over the following index values only; in this case over i4 and i5. The values for i1 and i2 are those chosen from the earlier **links** in this Superedge which have already been laid out. On the other hand, if there is a back edge, then the first **node** to be added is determined entirely by FIG. 39, since there is no index value associated with this **link** L.

Once Step 1586 has determined the primary path P(L) for link L, the Step 1588 determines the best secondary sequence(s) which may...

17/5,K/4

DIALOG(R)File 348:European Patents
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00839561

ORDER fax of complete patent from Dialog SourceOne. See HELP ORDER 348

Hyper-text document preparing apparatus

Hypertext-Dokumentvorbereitungsgerat

Dispositif de preparation de documents hypertextes

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PATENT (CC, No, Kind, Date): EP 777189 A2 970604 (Basic)
EP 777189 A3 970709
EP 777189 B1 990421

APPLICATION (CC, No, Date): EP 96308663 961129;

PRIORITY (CC, No, Date): JP 95314471 951201

DESIGNATED STATES: DE; FR; GB

INTERNATIONAL PATENT CLASS: G06F-017/30;

LEGAL STATUS (Type, Pub Date, Kind, Text):

Application: 970604 A2 Published application (Alwith Search Report
;A2without Search Report)

Examination: 970604 A2 Date of filing of request for examination:
961220

Search Report: 970709 A3 Separate publication of the European or
International search report

Examination: 970903 A2 Date of despatch of first examination report:
970717

Grant: 990421 B1 Granted patent

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS B	(English)	9916	889
CLAIMS B	(German)	9916	737
CLAIMS B	(French)	9916	1086
SPEC B	(English)	9916	6844

Total word count - document A 0

Total word count - document B 9556

Total word count - documents A + B 9556

ORDER fax of complete patent from Dialog SourceOne. See HELP ORDER 348

...SPECIFICATION a predetermined order for each service and add or delete one or more nodes to/from one service in a renewal operation, the inner-service **link** processing unit 401 for preparing a plurality of inner-service **links** (or buttons) to serially connect the **nodes** placed in the same service in the **ranked** order according to the service structural information, adding or deleting one or more inner-service **links** to/from one service in the renewal operation on condition that a layout of the **nodes** in the renewed service is predetermined to serially arrange the **nodes** in the **ranked** order, the service storing unit 103, the inter-service link processing unit 104, the inter-service link information storing unit 105, the hyper-text document...predetermined order for each service and add or delete one or more child nodes to/from one service in a renewal operation, the inner-service **link** processing unit 401 for preparing a plurality of inner-service **links** (or buttons) to connect the parent **node** and each of the child **nodes** placed in the same service and serially connect the child **nodes** in the **ranked** order according to the service structural information, adding or deleting one or more inner-service **links** to/from one service in the renewal operation on condition that a layout of the child **nodes** in the renewed service is predetermined to serially arrange the child **nodes** in the **ranked** order, the service storing unit 103, the inter-service link processing unit 104, the inter-service link information storing unit 105, the hyper-text document...

17/5,K/5

DIALOG(R) File 348:European Patents

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00794553

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Optimization apparatus for removing hazards by arranging instruction order
Optimierungsgerat zum Entfernen von Gefahren durch Arrangierung der
Befehlsreihenfolge

Appareil d'optimisation pour enlever des dangers par l'arrangement de
l'ordre des instructions

PATENT ASSIGNEE:

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PATENT (CC, No, Kind, Date): EP 740251 A2 961030 (Basic)

EP 740251 A3 970611

APPLICATION (CC, No, Date): EP 96302868 960424;

PRIORITY (CC, No, Date): JP 95104300 950427

DESIGNATED STATES: DE; FR; GB; NL

INTERNATIONAL PATENT CLASS: G06F-009/45;

ABSTRACT EP 740251 A2

An optimization apparatus is provided for removing hazards from a program by rearranging instructions for each program segment. The apparatus comprises: a Directed Acyclic Graph (DAG) generating means for generating DAGs for each program segment; a hazard marking means for marking hazard-including combinations of a parent instruction and a child instruction in the DAGs for hazard; and a rearranging means for rearranging the instructions for each program segment so that instructions are inserted between the instructions of each marked combination, wherein the inserted instructions do not destroy values stored in resources used by the instructions of the marked combination.

ABSTRACT WORD COUNT: 117

LEGAL STATUS (Type, Pub Date, Kind, Text):

Application: 961030 A2 Published application (Alwith Search Report
;A2without Search Report)

Search Report: 970611 A3 Separate publication of the European or
International search report

Examination: 970903 A2 Date of filing of request for examination:
970707

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	EPAB96	7572
SPEC A	(English)	EPAB96	9300
Total word count - document A			16872
Total word count - document B			0
Total word count - documents A + B			16872

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...SPECIFICATION MOV 50,D1" have been output already.

1-4:

Fig.11 is a sub-flowchart for step S3 of Fig.9. At step S3, instruction nodes of a DAG are selected with their ranks by detecting a link including a hazard.

At step p1, it is judged whether a hazard exists between a candidate instruction node and its parent instruction node: if exists...

17/5,K/6

DIALOG(R)File 348:European Patents

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00727541

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Dynamic window sizing in a data network

Dynamische Fensterbestimmung in einem Datennetzwerk

Prise des dimensions d'une fenetre dynamique dans un reseau de donnees

PATENT ASSIGNEE:

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LEGAL REPRESENTATIVE:

Watts, Christopher Malcolm Kelway, Dr. et al (37391), AT&T (UK) Ltd. 5,
Morningside Road, Woodford Green Essex, IG8 0TU, (GB)

PATENT (CC, No, Kind, Date): EP 687090 A2 951213 (Basic)

APPLICATION (CC, No, Date): EP 95112656 901121;

PRIORITY (CC, No, Date): US 443975 891130; US 607831 901108

DESIGNATED STATES: DE; FR; GB; IT

INTERNATIONAL PATENT CLASS: H04L-012/56;

ABSTRACT EP 687090 A2

A method for use in a high-speed virtual circuit digital network for resizing windows of virtual circuits in nodes of the network. The resizing of a virtual circuit's window is initiated by an input router at an edge of the digital network. When the input router determines that resizing is necessary, it sends a first congestion control message to the nodes through which the virtual circuit passes. If the message indicates a larger window, the node receiving the message determines what size window it can provide and sends the message with that window size on to the next node. An output router at the other edge of the digital network receives the message, sets the window size based on the message as altered by the nodes, and returns a second message with the final window size via the nodes. On receipt of the second message, the nodes alter their windows and the input router sends cells as permitted by the new window. Included in the method are novel techniques for determining the ideal window size for a virtual circuit, for determining at the input router when a change in window size is necessary, and for determining the size of the window in the nodes.

ABSTRACT WORD COUNT: 206

LEGAL STATUS (Type, Pub Date, Kind, Text):

Application: 951213 A2 Published application (Alwith Search Report
;A2without Search Report)

Examination: 951213 A2 Date of filing of request for examination:
950818

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	EPAB95	1526
SPEC A	(English)	EPAB95	13179
Total word count - document A			14705
Total word count - document B			0
Total word count - documents A + B			14705

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...CLAIMS A2

1. A method employed in a **node** of a virtual circuit network for sizing a window in the **node** for a given one of k virtual circuits using a given **link** from the **node** in response to a request for a different-sized window in the **node**, the method comprising the steps of:
determining the maximum window to which each of the k virtual

circuits is entitled according to a function whereby...
...j is greater than the maximum window for a virtual circuit j+1, $1 \leq j \leq k$;
determining the window for each virtual circuit in the **node**
and the **rank** of each virtual circuit with regard to the current
size of its window;
determining a potential **rank** which the given virtual circuit
would have if its window were the requested size; and
changing the **rank** of the given virtual circuit in the
direction required by the potential **rank** by exchanging its **rank**
with that of the next **ranking** virtual circuit in the required
direction until the given virtual circuit either attains the
potential **rank** or until further changing the **rank** of the given
virtual circuit would require changing the **rank** of the next
ranking virtual circuit to a **rank** such that the current size of
the window of the next **ranked** virtual circuit is greater than the
maximum window for the **rank** which the next **ranked** virtual circuit
would receive as a result of the exchange; and
sizing the window for the given virtual circuit such that the
window's size is the lesser of the size of the requested window and
the size of the maximum window for the final **rank** attained by the
given virtual circuit.

2. The method set forth in claim 1 wherein:
the step of determining the maximum window $W(\text{sub}(i...$

17/5,K/7

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00664927

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Information retrieval method

Informationswiederauffindungsverfahren

Procede de recouvrement d'informations

PATENT ASSIGNEE:

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INVENTOR:

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Higashino, Jun'ichi, 14-6, Nishikoigakubo 4-chome, Kokubunji-shi, (JP)
Hatakeyama, Atushi, 1-2, Hiyoshicho-4-chome, Kokubunji-shi, (JP)

LEGAL REPRESENTATIVE:

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PATENT (CC, No, Kind, Date): EP 638870 A1 950215 (Basic)

APPLICATION (CC, No, Date): EP 94114719 860325;

PRIORITY (CC, No, Date): JP 8560678 850327

DESIGNATED STATES: DE; FR; GB

INTERNATIONAL PATENT CLASS: G06F-017/30

ABSTRACT EP 638870 A1

A system for storing a large amount of heterogeneous information in
proper arrangement for facilitating utilization thereof by user, while
allowing semantical retrieval to be realized even from vague fragmental
information. The system can find application in document filing system
for storing and managing documents, intelligent card management systems
for storing and managing cards such as memorandum cards, or personal data
base required for handling heterogeneous information. A method of
expressing the facts constituting information in terms of "concepts"
representing things and "relations" defined between the concepts
internally of computer, and a method of inputting user's information to
computer through dialogical procedure and retrieving desired information.
Information stored internally of the computer architects internally a
concept network. A part of the concept network is displayed in various
forms such as hierarchical form based on subsumption relations between
the concepts, hierarchical representation based on part-whole relation
between the concept, a frame display of a single concept, and tabular

representation of a set of concepts belonging to a given class. A method of browsing internally of the network by referring to the contents of the display. The user can thus easily know what kind of information has been stored internally of the computer, whereby he or she can perform inputting of new information and retrieval of desired information in facilitated and simplified manner. The relations stored internally of the computer are classified into "generic relationship" and "instance relation" representing individual facts, whereby generic framework of facts can be stored. The framework can be applied to concrete concepts through inheritance mechanism. The generic framework is displayed upon interaction with the user for allowing new information to be inputted and desired information to be retrieved in a facilitated and simplified manner. Retrieval by using semantic retrieval formula created internally through dialogical procedure is realized through inferring processing.
(see image in original document)

ABSTRACT WORD COUNT: 311

LEGAL STATUS (Type, Pub Date, Kind, Text):

Application: 950215 A1 Published application (A1with Search Report
;A2without Search Report)
Examination: 950215 A1 Date of filing of request for examination:
941013
Examination: 980408 A1 Date of despatch of first examination report:
980219
Change: 990107 A1 International patent classification (change)
Change: 990107 A1 Title of invention (German) (change)
Change: 990107 A1 Title of invention (English) (change)
Change: 990107 A1 Title of invention (French) (change)

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	EPABF2	611
SPEC A	(English)	EPABF2	11284
Total word count - document A			11895
Total word count - document B			0
Total word count - documents A + B			11895

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...SPECIFICATION the concepts. Fig. 2 is a schematic diagram illustrating conceptually these elements in terms of a kind of a semantic network. In the figure, each **node** represented by an ellipse represents a concept, wherein the word written within the ellipse is typical one representing that concept. This word is referred to as the name of the concept. **Links** interconnecting the ellipses (i.e. solid and broken lines with respective arrows) represent the relationships among the concepts. For example, the fact that a "supercomputer 1012" is "one variety of" a "computer 1011" is represented by a **link** labelled "IS-A". Hereat, it should be mentioned that "UNIVERSAL 1010" is a specific concept defined to subsume all the other concepts. In other words, all the concepts constitute a concept tree having a root constituted by the concept "UNIVERSAL", wherein the concept tree represents a taxonomic hierarchy. The **link** "IS-A" is one variety of the relationships. However, this **link** also serves as a route for inheriting the property of a concept to the one **ranked** lower. Consequently, this **link** or relationship is considered discriminatively from the other relationships. To this end, the **links** "IS-A" are represented by the arrowed solid lines, while other **links** or relationships are represented by broken lines.

By way of example, suppose a generic property that computer runs software". It will be noted that this...

17/5,K/8

DIALOG(R) File 348:European Patents

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00637232

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Asynchronous switching node distributing dynamically cells to outputs forming an irregular group.

Asynchrone Vermittlungsstelle zur dynamischen Verteilung der Zellen an eine nicht-regulare Gruppe der Ausgänge.

Noeud de commutation asynchrone distribuant dynamiquement des cellules vers des sorties constituant un groupe dit irregulier.

PATENT ASSIGNEE:

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INVENTOR:

Henrion, Michel, 144 B Avenue Circulaire, B-1180 Bruxelles, (BE)

LEGAL REPRESENTATIVE:

Sciaux, Edmond et al (58914), c/o SOSPI, 14-16 rue de la Baume, F-75008
Paris, (FR)

PATENT (CC, No, Kind, Date): EP 618705 A1 941005 (Basic)

APPLICATION (CC, No, Date): EP 94400660 940328;

PRIORITY (CC, No, Date): FR 933763 930331

DESIGNATED STATES: AT; BE; CH; DE; ES; FR; GB; IT; LI; NL; SE

INTERNATIONAL PATENT CLASS: H04L-012/56; H04L-012/18;

ABSTRACT EP 618705 A1 (Translated)

The addresses of an irregular group of outputs of the **node** (ND) cannot be **linked** by a mathematical relationship. In order as regularly as possible to distribute cells applied to the input of the **node**, the latter includes translation circuits (T1, ... TN) determining, at the input of the network, an internal routing label identifying a regular subgroup of outputs, possibly consisting of a single output, according to an algorithm which is a function of the **rank** (j) of the input (Ij) receiving the said cell, and of the instant at which this cell was received. This algorithm thus achieves a spatial decorrelation and a time-based decorrelation of the cells.

Application to ATM telecommunications networks.

TRANSLATED ABSTRACT WORD COUNT: 118

ABSTRACT EP 618705 A1

Les adresses d'un groupe irregulier de sorties du noeud (ND) ne peuvent pas etre reliees par une relation mathematique. Pour distribuer aussi regulierement que possible des cellules appliquees aux entrees du noeud, ce dernier comporte des circuits de traduction (T1, ..., TN) determinant a l'entree du reseau une etiquette d'acheminement interne identifiant un sous-groupe regulier de sorties, eventuellement constitue d'une seule sortie, selon un algorithme qui est fonction du rang (j) de l'entree (Ij) recevant ladite cellule, et de l'instant auquel cette cellule a ete recue. Cet algorithme realise ainsi une decorrelation spatiale et une decorrelation temporelle des cellules.

Application aux reseaux de telecommunication ATM. (voir l image dans le document original)

ABSTRACT WORD COUNT: 114

LEGAL STATUS (Type, Pub Date, Kind, Text):

Application: 941005 A1 Published application (A1with Search Report
;A2without Search Report)

Examination: 950322 A1 Date of filing of request for examination:
950126

Examination: 980729 A1 Date of despatch of first examination report:
980612

LANGUAGE (Publication,Procedural,Application): French; French; French

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(French)	EPABF2	656
SPEC A	(French)	EPABF2	6782
Total word count - document A			7438
Total word count - document B			0
Total word count - documents A + B			7438

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...ABSTRACT Translated)

The addresses of an irregular group of outputs of the **node** (ND) cannot be **linked** by a mathematical relationship. In order as regularly as possible to distribute cells applied to the input of the **node**, the latter includes translation circuits (T1, ... TN) determining, at the input of the network, an internal routing label identifying a regular subgroup of outputs, possibly consisting of a single output, according to an algorithm which is a function of the **rank** (j) of the input (Ij) receiving the said cell, and of the instant at which this cell was received. This algorithm thus achieves a spatial...

17/5,K/9

DIALOG(R)File 348:European Patents

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00604893

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Optical transmission network with switching matrix

Optisches Übertragungsnetzwerk mit Schaltmatrix

Reseau de transmission optique avec matrice de commutation

PATENT ASSIGNEE:

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INVENTOR:

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Propriete Industrielle 30, avenue Kleber, 75116 Paris, (FR)

PATENT (CC, No, Kind, Date): EP 592330 A1 940413 (Basic)

EP 592330 B1 990526

APPLICATION (CC, No, Date): EP 93402512 931011;

PRIORITY (CC, No, Date): FR 9212018 921009

DESIGNATED STATES: AT; BE; CH; DE; ES; FR; GB; IT; LI; NL; SE

INTERNATIONAL PATENT CLASS: H04Q-011/00;

CITED PATENTS (EP A): WO 9210770 A; EP 492852 A

CITED REFERENCES (EP A):

PROCEEDINGS, IEEE CONFERENCE ON COMPUTER COMMUNICATIONS (INFOCOM '88),

27-28 MARS 1988, PAGES 354-361, NEW ORLEANS US , XP44787 G.R.HILL 'A

Wavelength Routing Approach to Optical Communications Networks'

IEEE JOURNAL ON SELECTED AREAS IN COMMUNICATION vol. 8, no. 6 , Ao)t 1990

, NEW YORK US pages 948 - 964 XP208590 C.A. BRACKETT 'Dense Wavelength

Division Multiplexing Networks: Principles and Applications'

PROCEEDINGS, INTERNATIONAL SWITCHING SYMPOSIUM, 27 MAI-1 JUIN 1990,

VOL.III PAGES 21-26, STOCKHOLM SE , XP130869 A.M. HILL 'A Distributed

Wavelength Switching Architecture for the TPON Local Network'

ELECTRONICS LETTERS vol. 23, no. 16 , 30 Juillet 1987 , STEVENAGE GB

pages 824 - 826 H. KOBRINSKI ET AL 'Demonstration of High Capacity in

the Lambdanet Architecture: a Multiwavelength Optical Network'

BBC RESEARCH DEPARTMENT REPORT no. 3 , Mars 1988 , TADWORTH GB pages 1 -

31 R.P. MARSDEN ET AL 'Digital Television Routing Systems: a Survey of

Optical and Electrical Techniques'

ELECTRONICS LETTERS vol. 28, no. 13 , 18 Juin 1992 , STEVENAGE GB pages

1268 - 1270 XP301528 H. OBARA ET AL 'Star Coupler Based WDM Switch

Employing Tunable Device with Reduced Tunability Range'

IEEE TRANSACTIONS ON PARALLEL AND DISTRIBUTED SYSTEMS vol. 1, no. 2 , Mai

1990 , NEW YORK US pages 47 - 53 XP128311 M. FUJIWARA ET AL 'Line

Capacity Expansion Schemes in Photonic Switching';

ABSTRACT EP 592330 A1 (Translated)

This network includes composite switching matrices (M1, M2, M3) each fanning out between several nodes (N1, N2, N3) of this network. These nodes are linked by optical fibres (L3A3, L1A4) transmitting spectral multiplexers which are included in these matrices. These matrices include emitters at staggered wavelengths (E2A1, 1...E2A2, 4), star-wired couplers (C2A1, C2A2) of the controlled spatial switching matrices

(X2A1...X2A4) and wavelength-controlled filters (F2A1,1...F2A4,4).

The invention applies to telecommunications.

TRANSLATED ABSTRACT WORD COUNT: 72

ABSTRACT EP 592330 A1

Ce reseau comporte des matrices de commutation composites (M1, M2, M3) eclatees chacune entre plusieurs noeuds (N1, N2, N3) de ce reseau. Ces noeuds sont relies par des fibres optiques (L3A3, L1A4) transmettant des multiplex spectraux et incluses dans ces matrices. Ces matrices comportent des emetteurs a longueurs d'onde echelonnees (E2A1, 1...E2A2, 4), des coupleurs en etoile (C2A1, C2A2) des matrices de commutation spatiales commandees (X2A1...X2A4) et des filtres commandes en longueurs d'onde (F2A1,1...F2A4,4).

L'invention s'applique aux telecommunications. (voir l image dans le document original)

ABSTRACT WORD COUNT: 87

LEGAL STATUS (Type, Pub Date, Kind, Text):

Application: 940413 A1 Published application (A1with Search Report ;A2without Search Report)
Examination: 940831 A1 Date of filing of request for examination: 940705
Examination: 970625 A1 Date of despatch of first examination report: 970509
Change: 990428 A1 Representative (change)
*Assignee: 990428 A1 Applicant (transfer of rights) (change): Alcatel (201878) 54, rue la Boetie 75382 Paris Cedex 08 (FR) (applicant designated states: AT;BE;CH;DE;ES;FR;GB;IT;LI;NL;SE)
*Assignee: 990428 A1 Previous applicant in case of transfer of rights (change): ALCATEL N.V. (829134) Strawinskylaan 341, (World Trade Center) NL-1077 XX Amsterdam (NL) (applicant designated states: AT;BE;CH;DE;ES;FR;GB;IT;LI;NL;SE)
Change: 990512 A1 Representative (change)
Grant: 990526 B1 Granted patent

LANGUAGE (Publication,Procedural,Application): French; French; French

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS B	(English)	9921	1541
CLAIMS B	(German)	9921	1353
CLAIMS B	(French)	9921	1416
SPEC B	(French)	9921	1906
Total word count - document A			0
Total word count - document B			6216
Total word count - documents A + B			6216

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...CLAIMS a set of filters (F2A1,1, ..., F2A4,4) constituted by a succession of groups of filters (GF2A1, ..., GF2A4), in which succession the groups have respective **ranks** (1, ..., 4), each of said groups of filters (GF2A1) being constituted by filters (F2A1,1, ..., F2A1,4) in succession and having respective **ranks** (1, ..., 4) in the group, each of the filters (F2A1,1) of the group being connected to an output having the same **rank** as the filter and belonging to one of said active distributors (X2A1) that has the same **rank** as the group, each of the filters having a controlled wavelength constituted by one of said carrier wavelengths, and feeding one of said outputs (Q2A1...

...one portion constituting a wavelength multiplexer (C2B3), and the other portion constituting a demultiplexer (C2C3), the two portions being connected together via one of said **link** fibers (L2A3) that is associated with the split distributor, the demultiplexer (C2C3) constituting a resident portion of said split matrix, which portion is included in said **node** (N2) associated with the matrix (M2), and

the multiplexer (C2B3) and said group of emitters (GE2A3) connected to the multiplexer constituting an exiled portion of the split matrix, the exiled portion being included in a host **node** (N1) associated with one of said composite matrices (M1), the host **node** being constituted by one of said **nodes** that is connected directly via said **link** fiber (L23A) to the **node** (N2) associated with said split matrix (M2), the emitters (E2A3,1, ..., E2A3,4) included in the exiled portion being electrically fed via inputs (P2A3,1) provided with detection and amplification means and optically fed via said filters included in said host **node** (N1), said multiplexer (C2B3) firstly including a succession of inputs (1C2A3, ..., 4C2A3) constituting said succession of inputs of the split distributor (C2A3). the multiplexer secondly including an output (C2B3L) constituting one of said **link** outputs of the associated **node** (N2), the demultiplexer (C2C3) including firstly an input (C2C3L) constituting one of said **link** inputs of the associated **node** . and secondly a succession of outputs (C2A3,1, ..., C2A3,4) constituting said succession of outputs of the split distributor, said output (C2B3L) of the multiplexer being connected to said input (C2C3L) of the demultiplexer via said **link** fiber (L2A3) associated with the split distributor, so that a plurality of said items of data are transmitted simultaneously between said associated **node** (N2) and said host **node** (N1) by means of wavelength multiplexing and via the fiber.

3. A network according to claim 2, characterized by the fact that said node (N2...

17/5,K/10

DIALOG(R)File 348:European Patents

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00541286

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Image recognition system.

Bildererkennungssystem.

Systeme de reconnaissance d'image.

PATENT ASSIGNEE:

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New York, New York 10014, (US), (applicant designated states:
CH;DE;FR;GB;IT;LI)

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Pawlicki, John A., 31464 Saratoga, Warren, Michigan 48093, (US)

LEGAL REPRESENTATIVE:

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105-109 Strand, London WC2R 0AE, (GB)

PATENT (CC, No, Kind, Date): EP 519737 A2 921223 (Basic)
EP 519737 A3 940119

APPLICATION (CC, No, Date): EP 92305646 920619;

PRIORITY (CC, No, Date): US 717430 910619

DESIGNATED STATES: CH; DE; FR; GB; IT; LI

INTERNATIONAL PATENT CLASS: G06K-009/68;

CITED PATENTS (EP A): US 3268864 A

CITED REFERENCES (EP A):

PATENT ABSTRACTS OF JAPAN vol. 11, no. 22 (P-538)21 January 1987 &
JP-A-61 195 478 (NEC) 29 August 1986

5TH INT. CONF. ON PATTERN RECOGNITION 1 December 1980 , FLA pages 988 -
90 S.T BOW 'Structural approach applicable to the primitive description
and extraction for complex chinese ideograph recognition'

PROC. OF COMPUTER VISION AND PATTERN RECOGNITION '83 19 June 1983 ,
WASHINGTON, VA pages 303 - 9 T PAVLIDIS 'Effects of distortion on the
recognition rate of a structural OCR system'

PATENT ABSTRACTS OF JAPAN vol. 5, no. 84 (P-64)2 June 1981 & JP-A-56 031
183 (FUJITSU) 28 March 1981;

ABSTRACT EP 519737 A2

An image recognition system includes a method and apparatus in which

images are characterised and compared on the basis of internal structure, which is independent of image size and image orientation. A library of reference images is first generated and stored, then each input image, or test image, is compared to the images stored in the library until a match is found. The image is represented in memory as nodes, lines, and curves. A plurality of descriptors, called reference keys and reference series, are generated for both the reference images and the test image. The reference library is screened for likely matches by comparing the descriptors for the test image of the descriptors in the reference images in the library. Inclusionary and exclusionary test are performed. After screening, each of the candidate reference images is searched by comparing the pathway through the reference image and the pathway through the test image, and by the degree of correlation between the reference and test images. In addition, the link ratio, a measure of the portion of the test image actually matched to the reference image is computed. Searching criteria, like the screening criteria are based on internal image structure, so that the recognition process is independent of image size and image orientation. (see image in original document)

ABSTRACT WORD COUNT: 217

LEGAL STATUS (Type, Pub Date, Kind, Text):

Application: 921223 A2 Published application (Alwith Search Report ;A2without Search Report)
Search Report: 940119 A3 Separate publication of the European or International search report
Examination: 940907 A2 Date of filing of request for examination: 940713
Withdrawal: 970625 A2 Date on which the European patent application was deemed to be withdrawn: 970103

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	EPABF1	3550
SPEC A	(English)	EPABF1	14430
Total word count - document A			17980
Total word count - document B			0
Total word count - documents A + B			17980

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...SPECIFICATION determined by "weighing" nodes by their intensity of links.

In order to weight a matrix, it is necessary to establish a "level of affinity" among **nodes** with identical or closely matching numbers of **nodes**. The level of affinity follows the rule that each **node** will have the strongest affinity for the **node** to which it is connected with the greatest number of **links**, with the strength of the affinity lessening as the difference in number of **links** widens. Affinity among **nodes** will establish their **ranked** order.

The level of affinity can be measured using the reference series. This is accomplished by calculating the reference series for each node. The concept...the series are considered equal.

The following table shows the sorted cumulative reference series for the character "E". (see image in original document)

By sorting **nodes** by their cumulative reference series, an order can be established which will always generate the same weighted matrix for the same internal relationships in the **link /node** image structure. Once the **nodes** have been sorted, one additional step, the process of "sliding" **nodes** is applied. Once the **node** list has been sorted by each **node**'s cumulative reference series, it is already arranged in descending order with the **node** of greatest reference series leading the list. The sliding process consists of sorting among **nodes** of equal **rank** by moving to a higher position in the **node** list those **nodes** which are **linked** to higher **ranked** **nodes**.

This process can best be described by example. For instance, the letter "E" has 5 **nodes** with the single central **node** (**Node 2**) with 3 **links** also having the greatest reference series. There are also 3 terminal **nodes**, each with only 1 **link**. At the end of the reference series sort,

the 3 single link nodes may fall into in any one of 6 orders (i.e. 3!). Through the sliding process, however, the node that is connected to the 3-link node will be moved to a position in the node list higher than the other 2. The actual sliding process works by starting with the highest ranked node, (in the case of "E", this is Node 2) then checking each node connected to it by a direct link. In this example, Node 2 is connected to Nodes 1, 3 and 5. Each of these nodes is checked by comparing it to the one in the next higher position in the ranked node list. As can be seen in the above table Node 1 would be compared with Node 2, Node 3 with Node 1 and Node 5 with Node 4. A comparison is then conducted. If the node in the next higher slot has a higher reference series, the process stops, since the nodes are not of equal reference series value. If the reference series are equal, the nodes are switched. In the example, Node 2 has a higher reference series than Node 1. Thus, they would not be switched, however, Node 1 will be "flagged" to note that it has already been evaluated and should not be switched in another comparison. Node 3 is then compared with Node 1. Although they have the equal reference series, Node 1 has already been flagged and, thus, they will not be switched. The final comparison is between Node 5 and Node 4. Both Nodes have equal reference series and Node 5 has not been flagged as previously evaluated. They can be switched. This process is repeated until a node with a higher reference series is encountered. In the case of Node 4, this occurs when it is compared to Node 3. The process is completed for all nodes connected to the first node, Node 2. All nodes evaluated have been "marked" so that they cannot be switched with any others. The process is repeated starting with the second ranked node in the list Node 2 and proceeds along the list until all nodes have been considered. Once the sliding process has been completed for all nodes in an image, the matrix of linkages has been successfully "weighted" and will always be the same for images with the same link / node structure.

In summary, using character "E" as an example, the sliding process will move Node 5 to the highest position for all 1 link nodes since it is connected to Node 2, the highest ranking Node in the image structure. Node 6 will follow Node 5, since Node 6 is connected to Node 1, the second highest ranking Node in the image structure.

Once the matrix is created it is possible to generate the reference key. Identical matrices will always produce identical keys. Examples...

17/5,K/11

DIALOG(R) File 348:European Patents
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00502896

ORDER fax of complete patent from Dialog SourceOne. See HELP ORDER 348
ROUTING OF NETWORK TRAFFIC USING DISCRETE TRAFFIC MEASUREMENT DATA
NETZWERKVERKEHRSLEITWEGSTEUERUNG UNTER VERWENDUNG VON DISKRETEN
VERKEHRSMESSDATEN
ACHEMINEMENT DE TRAFIC DE RESEAU UTILISANT DES DONNEES DE MESURES DE TRAFIC
DISCRETES

PATENT ASSIGNEE:

BELL COMMUNICATIONS RESEARCH, INC., (745326), Legal Department, Morris
Corporate Center, 445 South Street, Morristown, New Jersey 07960-6438,
(US), (applicant designated states: FR;GB)

INVENTOR:

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LEGAL REPRESENTATIVE:

Dubois-Chabert, Guy et al (15351), Societe de Protection des Inventions
25, rue de Ponthieu, 75008 Paris, (FR)

PATENT (CC, No, Kind, Date): EP 537153 A1 930421 (Basic)
EP 537153 A1 930804
EP 537153 B1 990414
WO 9120148 911226

APPLICATION (CC, No, Date): EP 91907016 910204; WO 91US728 910204
PRIORITY (CC, No, Date): US 538657 900615

DESIGNATED STATES: FR; GB
INTERNATIONAL PATENT CLASS: H04Q-003/66; H04M-003/36;
CITED PATENTS (WO A): US 4788721 A; US 4704724 A; US 4748658 A; US 4931941
A; US 4669113 A; US 4284852 A

CITED REFERENCES (EP A):

PROCEEDINGS OF NETWORK MANAGEMENT AND CONTROL WORKSHOP September 1989,
TARRYTOWN (US) pages 389 - 413 S. KHERADPIR 'PARS: A predictive
access-control and routing strategy for real-time control of
telecommunication networks';

LEGAL STATUS (Type, Pub Date, Kind, Text):

Application: 930421 A1 Published application (A1with Search Report
;A2without Search Report)
Examination: 930421 A1 Date of filing of request for examination:
921211
Change: 930623 A1 International patent classification (change)
Change: 930623 A1 Obligatory supplementary classification
(change)
Search Report: 930804 A1 Drawing up of a supplementary European search
report: 930615
Examination: 960612 A1 Date of despatch of first examination report:
960425
Change: 980701 A1 Title of invention (German) (change)
*Assignee: 981202 A1 Applicant (transfer of rights) (change): BELL
COMMUNICATIONS RESEARCH, INC. (745326) Legal
Department, Morris Corporate Center, 445 South
Street Morristown, New Jersey 07960-6438 (US)
(applicant designated states: FR;GB)
*Assignee: 981202 A1 Previous applicant in case of transfer of
rights (change): BELL COMMUNICATIONS RESEARCH,
INC. (745320) 290 West Mt. Pleasant Avenue
Livingston, New Jersey 07039-2729 (US)
(applicant designated states: FR;GB)
Grant: 990414 B1 Granted patent

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS B	(English)	9915	551
CLAIMS B	(German)	9915	510
CLAIMS B	(French)	9915	581
SPEC B	(English)	9915	6745
Total word count - document A			0
Total word count - document B			8387
Total word count - documents A + B			8387

ORDER fax of complete patent from Dialog SourceOne. See HELP ORDER 348

...SPECIFICATION comprises TG4 and TG5; and R4 comprises TG4, TG6 and TG3.

In this progressive routing example, the first route considered, as
required by the hierarchical **ranking**, is R1. If TG1 has a non-blocking
status, the call is established over TG1. However, if TG1 is blocked,
then R2 is considered next. If TG2 is free, routing control is passed
from TC1 to PC2, without regard to the blocking status of TG3, the next
link in R2. If TG3 is blocked, the calling party is given a network
congestion signal indicative of a blocked route. With progressive
routing, R3 or...

...on a local, step-by-step basis. Consideration on a local basis has, in
part, been dictated by communication and signaling limitations imposed on
the **nodes**.

With the present availability of stored program control (SPC) and
so-called Common Channel Signaling (CCS) systems, communication among the
various centers may now be...

17/5,K/12

DIALOG(R) File 348:European Patents

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00457921

ORDER fax of complete patent from Dialog SourceOne. See HELP ORDER 348

Method for reducing the search complexity in analysis-by-synthesis coding

Methode zur Verminderung der Schwierigkeit der Suchen in Analyse-durch-Synthese-Kodierung

Methode pour reduire la difficulte de la recherche en codage utilisant l'analyse par synthese

PATENT ASSIGNEE:

GTE LABORATORIES INCORPORATED, (274323), 1209 Orange Street, Wilmington Delaware 01901, (US), (applicant designated states: BE;DE;FR;GB;IT)

INVENTOR:

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Veeneman, Dale E., 269 Cordaville Road, Southborough, MA 01772, (US)

LEGAL REPRESENTATIVE:

Grunecker, Kinkeldey, Stockmair & Schwanhausser Anwaltssozietat (100721), Maximilianstrasse 58, 80538 Munchen, (DE)

PATENT (CC, No, Kind, Date): EP 446817 A2 910918 (Basic)

EP 446817 A3 920304

EP 446817 B1 970604

APPLICATION (CC, No, Date): EP 91103623 910308;

PRIORITY (CC, No, Date): US 494071 900315

DESIGNATED STATES: BE; DE; FR; GB; IT

INTERNATIONAL PATENT CLASS: G10L-009/14;

CITED REFERENCES (EP A):

ICASSP 90, 1990 INTERNATIONAL CONFERENCE ON ACOUSTICS, SPEECH, AND SIGNAL PROCESSING, Albuquerque, New Mexico, 3rd - 6th April 1990, vol. 1, pages 481-484, IEEE, New York, US; D.E. VEENEMAN et al.: "An efficient code structure and search strategy for stochastic coding at 8 kb/s"

ICASSP 82, IEEE INTERNATIONAL CONFERENCE ON ACOUSTICS, SPEECH AND SIGNAL PROCESSING, Paris, 3rd - 4th May 1982, vol. 3, pages 1688-1671, IEEE, New York, US; M.R. SCHROEDER et al.: "Speech coding using efficient block codes"

IEEE TRANSACTIONS ON COMMUNICATIONS, vol. COM-27, no. 1, January 1979, pages 165-170, New York, US; S.G. WILSON et al.: "Adaptive tree encoding of speech at 8000 bits/s with a frequency-weighted error criterion"

IEEE TRANSACTIONS ON INFORMATION THEORY, vol. IT-17, no. 1, January 1971, pages 118-119, New York, US; F. JELINEK et al.: "Instrumentable tree encoding of information sources";

ABSTRACT EP 446817 A2

A method of encoding speech includes a limited search of a tree-code excitation codebook with a closed loop gain calculation for each test path under consideration. The gain calculation occurs when minimizing an error distance measurement between a synthetic signal defined by each test path being considered and the appropriate speech signal by optimizing a scaling factor of the synthetic signal. The encoding method achieves a significant reduction in computational complexity with minimal loss of performance. (see image in original document)

ABSTRACT WORD COUNT: 83

LEGAL STATUS (Type, Pub Date, Kind, Text):

Application: 910918 A2 Published application (Alwith Search Report ;A2without Search Report)

Search Report: 920304 A3 Separate publication of the European or International search report

Examination: 921028 A2 Date of filing of request for examination: 920831

Examination: 950906 A2 Date of despatch of first examination report: 950721

Grant: 970604 B1 Granted patent

Oppn None: 980527 B1 No opposition filed

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	EPABF1	991
CLAIMS B	(English)	EPAB97	334
CLAIMS B	(German)	EPAB97	325

CLAIMS B	(French)	EPAB97	413
SPEC A	(English)	EPABF1	3209
SPEC B	(English)	EPAB97	3222
Total word count	- document A		4200
Total word count	- document B		4294
Total word count	- documents A + B		8494

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...SPECIFICATION y(sub 2)y(sub 3) is less than that for the lower branch.
 In stage 2, two branches are extended out of each of **nodes** 21 and 22 so that four test paths are now being considered. Each test path consists of one of the two saved branches from stage 1 **linked** with a respective one of the four extended branches. An error distance measurement is calculated for each of the test paths, and the results are indicated by an appropriate distance **ranking** d(sub(i=1 to 4)) on each branch. Again, the distance measurements are minimized by optimizing a scaling factor of each synthetic signal so...

...SPECIFICATION with codeletter sequence y1))y2))y3)) is less than that for the lower branch.
 In stage 2, two branches are extended out of each of **nodes** 21 and 22 so that four test paths are now being considered. Each test path consists of one of the two saved branches from stage 1 **linked** with a respective one of the four extended branches. An error distance measurement is calculated for each of the test paths, and the results are indicated by an appropriate distance **ranking** di=1 to 4)) on each branch. Again, the distance measurements are minimized by optimizing a scaling factor of each synthetic signal so that each...

17/5,K/13
 DIALOG(R)File 348:European Patents
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00381534
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ROUTING OF NETWORK TRAFFIC.
NETZWERKVERKEHRSLEITWEGSTEUERUNG.
ACHEMINEMENT DES COMMUNICATIONS DANS UN RESEAU.
 PATENT ASSIGNEE:

BELL COMMUNICATIONS RESEARCH, INC., (745320), 290 West Mt. Pleasant Avenue, Livingston, New Jersey 07039-2729, (US), (applicant designated states: AT;BE;CH;DE;FR;GB;IT;LI;LU;NL;SE)

INVENTOR:
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 OTT, Teunis, Jan, 44 Mountain View Drive, Chester, NJ 07930, (US)

LEGAL REPRESENTATIVE:
 Dubois-Chabert, Guy et al (15351), Societe de Protection des Inventions 25, rue de Ponthieu, F-75008 Paris, (FR)

PATENT (CC, No, Kind, Date): EP 393126 A1 901024 (Basic)
 EP 393126 B1 930421
 WO 8905552 890615

APPLICATION (CC, No, Date): EP 89900763 881206; WO 88US4353 881206

PRIORITY (CC, No, Date): US 130423 871209

DESIGNATED STATES: AT; BE; CH; DE; FR; GB; IT; LI; LU; NL; SE

INTERNATIONAL PATENT CLASS: H04M-007/00; H04Q-003/66; H04M-003/36;

CITED REFERENCES (EP A):

See also references of WO8905552;

LEGAL STATUS (Type, Pub Date, Kind, Text):

Application: 901024 A1 Published application (A1with Search Report ;A2without Search Report)
 Examination: 901024 A1 Date of filing of request for examination: 900522
 Examination: 920930 A1 Date of despatch of first examination report: 920819
 Grant: 930421 B1 Granted patent
 Oppn None: 940413 B1 No opposition filed

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS B	(English)	EPBBF1	613
CLAIMS B	(German)	EPBBF1	605
CLAIMS B	(French)	EPBBF1	704
SPEC B	(English)	EPBBF1	6049

Total word count - document A 0

Total word count - document B 7971

Total word count - documents A + B 7971

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...SPECIFICATION comprises TG4 and TG5; and R4 comprises TG4, TG6 and TG3.

In this progressive routing example, the first route considered, as required by the hierarchical **ranking**, is R1. If TG1 has a non-blocking status, the call is established over TG1. However, if TG1 is blocked, then R2 is considered next. If TG2 is free, routing control is passed from TC1 to PC2, without regard to the blocking status of TG3, the next **link** in R2. If TG3 is blocked, the calling party is given a network congestion signal indicative of a blocked route. With progressive routing, R3 or...

...on a local, step-by-step basis. Consideration on a local basis has, in part, been dictated by communication and signaling limitations imposed on the **nodes**.

With the present availability of stored program control (SPC) and so-called Common Channel Signaling (CCS) systems, communication among the various centers may now be...

17/5,K/14

DIALOG(R)File 348:European Patents

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00336314

ORDER fax of complete patent from Dialog SourceOne. See HELP ORDER 348

Apparatus and method for structuring data written according to ISO/8824/ASN.1 specification

Vorrichtung und Verfahren zur Strukturierung von nach ISO/8824/ASN.1-Spezifikation geschriebenen Daten

Dispositif et methode pour structurer des donnees ecrites selon la specification ISO/8824/ASN.1

PATENT ASSIGNEE:

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(applicant designated states: DE;FR;GB)

INVENTOR:

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LEGAL REPRESENTATIVE:

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PATENT (CC, No, Kind, Date): EP 327102 A2 890809 (Basic)

EP 327102 A3 920122

EP 327102 B1 990506

APPLICATION (CC, No, Date): EP 89101890 890203;

PRIORITY (CC, No, Date): JP 8826465 880205

DESIGNATED STATES: DE; FR; GB

INTERNATIONAL PATENT CLASS: G06F-009/44; H04L-029/06;

CITED REFERENCES (EP A):

COMPUTER NETWORKS AND ISDN SYSTEMS. vol. 14, no. 2-5, 1987,
AMSTERDAM, NL pages 297 - 303; F. CANESCHI ET AL.: 'AN ARCHITECTURE FOR
AN ASN.1 ENCODER/DECODER'

SOFTWARE PRACTICE & EXPERIENCE. vol. 17, no. 11, November
1987, CHICHESTER, GB pages 847 - 858; P. JALOTE: 'SYNTHESIZING
IMPLEMENTATIONS OF ABSTRACT DATA TYPES FROM AXIOMATIC SPECIFICATIONS'

BRITISH TELECOM TECHNOL. JOURNAL vol. 5, no. 4, October
1987, pages 70 - 75; J.A. ZAJACZKOWSKI: 'AN INTRODUCTION TO THE
CCITT/ISO STANDARD ON TRANSFER SYNTAX AND NOTATION';

ABSTRACT EP 327102 A2

In a data structuring apparatus, input character strings written in accordance with the specification of ISO/8824/ASN.1 are decomposed and keywords representative of types and attributes are detected from the decomposed character strings. Type nodes are created from the detected type representative keywords and attribute nodes are created from the attribute representative keywords. Internode linking means is provided for establishing links between the type nodes and the attribute nodes according to hierarchical relationships between them and forming a tree structure by the established links. The tree structure is traced and the input character strings are translated according to the traced tree structure into a declaration sentence which can be processed by a computer program. (see image in original document)

ABSTRACT WORD COUNT: 122

LEGAL STATUS (Type, Pub Date, Kind, Text):

Application: 890809 A2 Published application (Alwith Search Report ;A2without Search Report)
Examination: 890809 A2 Date of filing of request for examination: 890203
Search Report: 920122 A3 Separate publication of the European or International search report
Examination: 940406 A2 Date of despatch of first examination report: 940223
*Assignee: 990107 A2 Applicant (transfer of rights) (change): NEC CORPORATION (236696) 33-1, Shiba 5-chome Minato-ku Tokyo (JP) (applicant designated states: DE;FR;GB)
*Assignee: 990107 A2 Previous applicant in case of transfer of rights (change): NEC CORPORATION (236690) 7-1, Shiba 5-chome Minato-ku Tokyo (JP) (applicant designated states: DE;FR;GB)
Grant: 990506 B1 Granted patent

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Table with 4 columns: Available Text, Language, Update, Word Count. Rows include CLAIMS B (English, German, French) and SPEC B (English) with their respective word counts and update dates.

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...SPECIFICATION generating means 3 and 4 to generate nodes in cooperation with the internode linking means 5 in a manner described hereinbelow.

In Fig. 3, the node generating subroutine 13 of Fig. 2 begins with a decision block 15 which determines if each of the detected "type" keywords (elements) has a subelement. If the answer is affirmative, exit is to subroutine 16 which directs the attribute node generating means 4 to successively generate "attribute" nodes beginning with a subelement having a lowermost rank. Thus, in respect of "INTEGER", attribute nodes eal1 and eal3 are successively created and in respect of "IA5String" and "SEQUENCE" attribute nodes eal2 and eal4 are created, respectively (see Fig. 7). As shown in detail in Fig. 4, the subroutine 16 of Fig 3 begins with a decision block 41 which determines if there is a lower ranking subelement in the elements detected by operations block 13. If there is one, exit is to operations block 42 which causes the internode linking means 5 to establish links between such subelements and directs the writing of pointers linking the above-mentioned "attribute" nodes into the first item of such attribute nodes having a lower ranking subelement. If there is no lower ranking subelement in the detected subelements, exit is to operations block 43 which directs the writing of a null pointer (-) into the first item of an attribute node having no lower ranking subelement. As shown in Fig. 7, if attribute nodes eal1, eal2, eal3 and eal4 are ranked in an increasing

order named, a pointer to attribute **node** eal1 is written into the first item of **node** eal2, a pointer to **node** eal2 is written into the first item of **node** eal3, and a null pointer (-) is written into the first item of attribute **nodes** eal1 and eal4.

The attribute node generating means 4 proceeds to operations block 44 which directs the writing of a value corresponding to the identifier...eal4.

If the answer is negative in decision block 15 or subroutine 16 has been executed, control proceeds to subroutine 17 which directs the type **node** generating means 3 to write a value indicative of the type of each **node** into the first item of that **node** and directs the internode **linking** means 5 to detect a pointer **linking** each type **node** to a higher **ranking** attribute **node** if there is one and writes the pointer into the second item of type **nodes**. If there is no subelement, a null pointer is written into the second item of type **nodes**. As shown in Fig. 7, for example, "INTEGER", "IA5String", and "SEQUENCE" are written into the first item of the type **nodes** tt11, tt12 and tt14, respectively, and a null pointer is written into the second item of type **nodes** tt11 and tt12 and a pointer to attribute **node** eal3 is written into the second item of type **node** tt14.

In this way, attribute node and type nodes are linked in tree form. In operations block 14, the C-language declaration sentence generating means ...

17/5,K/15

DIALOG(R)File 348:European Patents

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00273869

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Synthetic peptides which induce cellular immunity to the aids virus and aids viral proteins.

Synthetische Peptide, die zellulare Immunitat gegen den AIDS-Virus und dessen Proteine erzeugen.

Peptides synthetiques induisant l'immunité cellulaire contre le virus du SIDA et ses proteines.

PATENT ASSIGNEE:

THE UNITED STATES OF AMERICA as represented by the Secretary, United States Department of Commerce, (301900), National Technical Information Service, Office of Government Inventions and Patents, 5285 Port Royal Road, Springfield, Virginia 22161, (US), (applicant designated states: AT;BE;CH;DE;FR;GB;IT;LI;LU;NL;SE)

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Cornette, James L., 2814 Torrey Pines Circle, Ames, IA 50010, (US)

Ouyang, Cecilia Spencer, 1915 Winnexburg Court, Apt. 101, Silver Spring, MD 20906, (US)

LEGAL REPRESENTATIVE:

Jump, Timothy John Simon et al (55591), F.J. Cleveland and Company 40-43 Chancery Lane, London WC2A 1JQ, (GB)

PATENT (CC, No, Kind, Date): EP 273716 A2 880706 (Basic)

EP 273716 A3 891220

EP 273716 B1 930811

APPLICATION (CC, No, Date): EP 87311391 871223;

PRIORITY (CC, No, Date): US 947935 861230; US 14430 870212

DESIGNATED STATES: AT; BE; CH; DE; FR; GB; IT; LI; LU; NL; SE

INTERNATIONAL PATENT CLASS: C07K-007/08; C07K-007/10; A61K-037/02;

A61K-039/21

ABSTRACT EP 273716 A2

This invention relates to the identification of short peptide segments of AIDS virus proteins which elicit T cellular immunity, and to a method of inducing cellular immunity to native proteins of the AIDS virus by

immunization with short synthetic peptides. Five potential peptides have been identified by searching for regions which can fold as a maximally amphipathic helix. These may be useful to include in either a synthetic peptide- or recombinant fragment-based vaccine.

ABSTRACT WORD COUNT: 77

LEGAL STATUS (Type, Pub Date, Kind, Text):

Application: 880706 A2 Published application (Alwith Search Report ;A2without Search Report)
Examination: 880706 A2 Date of filing of request for examination: 871230
Search Report: 891220 A3 Separate publication of the European or International search report
*Assignee: 910109 A2 Applicant (transfer of rights) (change): THE UNITED STATES OF AMERICA as represented by the Secretary, United States Department of Commerce (301900) National Technical Information Service, Office of Government Inventions and Patents, 5285 Port Royal Road Springfield, Virginia 22161 (US) (applicant designated states: AT;BE;CH;DE;FR;GB;IT;LI;LU;NL;SE)
Examination: 920122 A2 Date of despatch of first examination report: 911205
Grant: 930811 B1 Granted patent
Oppn None: 940803 B1 No opposition filed

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS B	(English)	EPBBF1	371
CLAIMS B	(German)	EPBBF1	297
CLAIMS B	(French)	EPBBF1	378
SPEC B	(English)	EPBBF1	5089
Total word count - document A			0
Total word count - document B			6135
Total word count - documents A + B			6135

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...SPECIFICATION gp120 envelope protein of the HTLV-IIIb isolates of HIV for sequences consistent with formation of amphipathic helices as potential T cell sites. Sites were **ranked** according to the apparent strength of helical amphipathicity as reflected in the Amphipathic Score, and frequencies were examined for consistency. Sites were further selected for occurrence in constant regions of gp120 (based on a comparison of the sequence of six isolates) and for absence of N-linked glycosylation sites. AMPHI parameters for the two most favorable sites are shown in Figure 2. Candidate T cell sites were selected by including appropriate flanking...R10 contains residues 49 through 474 and P1 residues 294 through 474 of the envelope protein.

As a genetically defined model of an outbred population, **there** was studied the immune response to these proteins in (C57BL/6 x C3H/HeJ)F(sub 1) and (A.SW x BALB/c)F(sub...

17/5,K/16

DIALOG(R)File 348:European Patents
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00253441

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ROUTING OF NETWORK TRAFFIC.

NETZWERKVERKEHRSLEITWEGSTEUERUNG.

ACHEMINEMENT DU TRAFIC DANS UN RESEAU.

PATENT ASSIGNEE:

Bell Communications Research, Inc., (745320), 290 West Mt. Pleasant Avenue, Livingston New Jersey 07039-2729, (US), (applicant designated states: CH;DE;FR;GB;LI)

INVENTOR:

KRISHNAN, Komandur, Ramu, 56 Shannon Road, Bridgewater, NJ 08807, (US)
OTT, Teunis, Jan, 44 Mountain View Drive, Chester, NJ 07930, (US)

LEGAL REPRESENTATIVE:

Dubois-Chabert, Guy et al (15351), Societe de Protection des Inventions
25, rue de Ponthieu, F-75008 Paris, (FR)

PATENT (CC, No, Kind, Date): EP 288462 A1 881102 (Basic)
EP 288462 B1 910529
WO 8703763 870618

APPLICATION (CC, No, Date): EP 86906601 861014; WO 86US2154 861014

PRIORITY (CC, No, Date): US 805302 851205

DESIGNATED STATES: CH; DE; FR; GB; LI

INTERNATIONAL PATENT CLASS: H04M-007/00; H04Q-003/66; H04M-003/36;

CITED REFERENCES (EP A):

See also references of WO8703763;

CITED REFERENCES (WO A):

International Teletraffic Congress, ITC-11, Volume 5, September 1985,
Elsevier Science Publishers B.V. (North-Holland), (Amsterdam, NL), T.J.

OTT et al.: "State Dependent Routing of Telephone Traffic and the use
of Separable Routing Schemes", pages 867-872, see page 870, paragraph 5

Tenth International Teletraffic Congress, Proceeding 1, Volume 1, June
1983, (Montreal, CA), T. KARSTAD et al.: "Centralized Routing based on

Forecasts of the Telephone Traffic", session 3.2, paper No. 7, pages
1-6, see page 1, left-hand column, line 14 - right-hand column, line

17; page 2, right-hand column; page 3, left-hand column, paragraph 4

International Teletraffic Congress, ITC-11, Volume 5, September 1985,
Elsevier Science Publishers B.V. (North-Holland), (Amsterdam, NL), G.R.

ASH: "Use of a Trunk Status Map for Real-Time DNHR", pages 795-801, see
page 797, left-hand column, lines 31-34; page 798, left-hand column,

lines 1-46 cited in the application

The Bell System Technical Journal, Volume 60, No. 8, October 1981,
American Telephone and Telegraph Company, (Murrey Hill, US), G.R. ASH

et al.: "Servicing and Real-Time Control of Networks with Dynamic
Routing", pages 1821-1845, see pages 1839-1841, paragraphs 5.1 and 5.2;

LEGAL STATUS (Type, Pub Date, Kind, Text):

Application: 881102 A1 Published application (Alwith Search Report
;A2without Search Report)
Examination: 881102 A1 Date of filing of request for examination:
880526
Examination: 901003 A1 Date of despatch of first examination report:
900820
Grant: 910529 B1 Granted patent
Oppn None: 920520 B1 No opposition filed

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS B	(English)	EPBBF1	489
CLAIMS B	(German)	EPBBF1	490
CLAIMS B	(French)	EPBBF1	546
SPEC B	(English)	EPBBF1	5411
Total word count - document A			0
Total word count - document B			6936
Total word count - documents A + B			6936

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...SPECIFICATION comprises TG4 and TG5; and R4 comprises TG4, TG6 and TG3.

In this progressive routing example, the first route considered, as
required by the hierarchical **ranking**, is R1. If TG1 has a non-blocking
status, the call is established over TG1. However, if TG1 is blocked,
then R2 is considered next. If TG2 is free, routing control is passed
from TC1 to PC2, without regard to the blocking status of TG3, the next
link in R2. If TG3 is blocked, the calling party is given a network
congestion signal indicative of a blocked route. With progressive
routing, R3 or...

...on a local, step-by-step basis. Consideration on a local basis has, in
part, been dictated by communication and signaling limitations imposed on
the **nodes**.

With the present availability of stored program control (SPC) and

so-called Common Channel Signaling (CCS) systems, communication among the various centers may now be effected...

17/5,K/17

DIALOG(R) File 348:European Patents
(c) 1999 European Patent Office. All rts. reserv.

00199823

ORDER fax of complete patent from Dialog SourceOne. See HELP ORDER 348

System for information storage and retrieval.

Informationsaufzeichnungs- und Wiederauffindungssystem.

Systeme d'enregistrement et de recherche d'information.

PATENT ASSIGNEE:

HITACHI, LTD., (204144), 6, Kanda Surugadai 4-chome, Chiyoda-ku, Tokyo
100, (JP), (applicant designated states: DE;FR;GB)

INVENTOR:

Fujisawa, Hiromichi, Kotesashi-Haitsu 510 15 Kotesashicho-3-chome,
Tokorozawa-shi, (JP)

Higashino, Jun'ichi, 14-6, Nishikoigakubo-4-chome, Kokubunji-shi, (JP)

Hatakeyama, Atushi, 1-2, Hiyoshicho-4-chome, Kokubunji-shi, (JP)

LEGAL REPRESENTATIVE:

Strehl Schubel-Hopf Groening & Partner (100941), Maximilianstrasse 54,
D-80538 Munchen, (DE)

PATENT (CC, No, Kind, Date): EP 196064 A2 861001 (Basic)

EP 196064 A3 891115

EP 196064 B1 951018

APPLICATION (CC, No, Date): EP 86104083 860325;

PRIORITY (CC, No, Date): JP 8560678 850327

DESIGNATED STATES: DE; FR; GB

INTERNATIONAL PATENT CLASS: G06F-017/30;

CITED PATENTS (EP A): EP 130050 A; EP 130050 A

CITED REFERENCES (EP A):

FIRST INTERNATIONAL WORKSHOP ON EXPERT DATABASE SYSTEMS, 24th-27th
October 1984, pages 79-90, Kiawah Island, South Carolina, US; T. FININ
et al.: "Interactive classification as a knowledge acquisition tool"

IDEM

PROCEEDINGS OF NATIONAL CONFERENCE OF AAAI, 1982, pages 314-318; F.N. TOU
et al.: "RABBIT: An intelligent database assistant"

IEEE TRANSACTIONS ON SOFTWARE ENGINEERING, vol. SE-10, no. 6, November
1984, pages 619-628, IEEE, New York, US; D.R. DOLK et al.: "Knowledge
representation for model management systems";

ABSTRACT EP 196064 A2

System for information storage and retrieval.

A system for storing a large amount of heterogeneous information in proper arrangement for facilitating utilization thereof by user, while allowing semantical retrieval to be realized even from vague fragmental information. The system can find application in document filing system for storing and managing documents, intelligent card management systems for storing and managing cards such as memorandum cards, or personal data base required for handling heterogeneous information. A method of expressing the facts constituting information in terms of .<<.concepts.>>. representing things and .<<.relations.>>. defined between the concepts internally of computer, and a method of inputting user's information to computer through dialogical procedure and retrieving desired information, information stored internally of the computer architects internally a concept network. A part of the concept network is displayed in various forms such as hierarchical form based on subsumption relations between the concepts, hierarchical representation based on part-whole relation between the concept, a frame display of a single concept, and tabular representation of a set of concepts belonging to a given class. A method of browsing internally of the network by referring to the contents of the display. The user can thus easily know what kind of information has been stored internally of the computer, whereby he or she can perform inputting of new information and retrieval of desired information in facilitated and simplified manner. The relations stored internally of the computer are classified into

.<<.generic relationship.>>. and .<<.instance relation.>>. representing individual facts, whereby generic framework of facts can be stored. The framework can be applied to concrete concepts through inheritance mechanism. The generic framework is displayed upon interaction with the user for allowing new information to be inputted and desired information to be retrieved in a facilitated and simplified manner. Retrieval by using semantic retrieval formula created internally through dialogical procedure is realized through inferring processing.

ABSTRACT WORD COUNT: 311

LEGAL STATUS (Type, Pub Date, Kind, Text):

Application: 861001 A2 Published application (Alwith Search Report
;A2without Search Report)
Change: 890118 A2 Representative (change)
Search Report: 891115 A3 Separate publication of the European or
International search report
Examination: 900530 A2 Date of filing of request for examination:
900329
Examination: 920805 A2 Date of despatch of first examination report:
920623
Change: 951018 A2 Miscellaneous (change)
Grant: 951018 B1 Granted patent
Oppn None: 961009 B1 No opposition filed

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS B	(English)	EPAB95	292
CLAIMS B	(German)	EPAB95	265
CLAIMS B	(French)	EPAB95	373
SPEC B	(English)	EPAB95	11348
Total word count - document A			0
Total word count - document B			12278
Total word count - documents A + B			12278

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...SPECIFICATION the concepts. Fig. 2 is a schematic diagram illustrating conceptually these elements in terms of a kind of a semantic network. In the figure, each **node** represented by an ellipse represents a concept, wherein the word written within the ellipse is typical one representing that concept. This word is referred to as the name of the concept. **Links** interconnecting the ellipses (i.e. solid and broken lines with respective arrows) represent the relationships among the concepts. For example, the fact that a "supercomputer 1012" is "one variety of" a "computer 1011" is represented by a **link** labelled "IS-A". Hereat, it should be mentioned that "UNIVERSAL 1010" is a specific concept defined to subsume all the other concepts. In other words, all the concepts constitute a concept tree having a root constituted by the concept "UNIVERSAL", wherein the concept tree represents a taxonomic hierarchy. The **link** "IS-A" is one variety of the relationships. However, this **link** also serves as a route for inheriting the property of a concept to the one **ranked** lower. Consequently, this **link** or relationship is considered discriminatively from the other relationships. To this end, the **links** "IS-A" are represented by the arrowed solid lines, while other **links** or relationships are represented by broken lines. By way of example, suppose a generic property that "computer runs software". It will be noted that this...

File 256:SoftBase:Reviews,Companies&Prods. 85-1999/May
(c)1999 Info.Sources Inc
File 621:New Prod.Annou.(R) 1985-1999/Jun 10
(c) 1999 The Gale Group
File 278:Microcomputer Software Guide 1999/May
(c) 1999 Reed Elsevier Inc.
File 610:Business Wire 1999-1999/Jun 10
(c) 1999 Business Wire.
File 613:PR Newswire 1999-1999/Jun 10
(c) 1999 PR Newswire Association Inc

Set	Items	Description
S1	54906	CATEGORI? OR RANK OR PRIORIT? OR HIERARCH? OR CLASSIF?
S2	148655	NODE? ? OR PROCESSOR? ? OR CONTROLLER? ? OR TERMINAL? ? OR BRANCH?? ? OR JUNCTION?
S3	328208	LINK? OR CONNECT? OR JOIN OR COMBINE? OR BACK()LINK? OR BA- CKLINK?
S4	99190	DATABASE? OR DATABANK? OR DATA() (BASE? OR BANK?)
S5	333897	INTERNET OR INTRANET OR LAN OR WORLD()WIDE()WEB OR WEB OR - LOCAL()AREA()NETWORK?
S6	272716	CITATION? OR DOCUMENT? OR REPORT? ?
S7	19	WEIGHTED(7N)SUM
S8	1	(S1(5N)S2)(S)(S3(5N)S4)(S)S5
S9	60	(S1(5N)S2)(S)S3(S)S5
S10	4	S1(5N)S2(5N)S3(5N)S5
S11	187	S1(3N)S2
S12	16	S11(5N)S3
S13	0	S12(5N)S5
S14	1	S12(S)S5
S15	1	RD (unique items)
S16	14	S6(S)S9

10/3,K/1 (Item 1 from file: 621)
DIALOG(R)File 621:New Prod.Annou.(R)
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00953256

50260667

WRQ Reflection EnterView First to Quickly and Easily Deliver Web-Based Host Access Across the Enterprise.

Business Wire
August 24, 1998 WORD COUNT: 1000

...NT PC, Mac, laptop, workstation or network computer (a browser with full Java 1.1 support is required).

Ease of Use

Simple operation is a **priority** when deploying a new **terminal** emulation product. With Reflection EnterView, one click on a **web link connects** any user.

Reflection EnterView's flexible design takes advantage of the web environment through Java-based APIs (application program interfaces). Accessible through Java, JavaScript, VBScript...

10/3,K/2 (Item 2 from file: 621)
DIALOG(R)File 621:New Prod.Annou.(R)
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00942541

50215931

ClientSoft Announces Investment by Spencer Trask.

Business Wire
DATELINE: TARRYTOWN, N.Y. August 3, 1998 WORD COUNT: 429

...most demanding clients
in the Fortune 1000 to date."

ClientSoft has been providing companies and organizations with software solutions focusing on the Year 2000 Transition, **Web** enablement of legacy applications and **terminal** emulator replacement. Annually, these three industry **categories** are a **combined** \$1.5 billion market.

"Our customers have earned the right to expect the best -solutions that work internally and externally," stated Scott C. Nevins, President...

10/3,K/3 (Item 3 from file: 621)
DIALOG(R)File 621:New Prod.Annou.(R)
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00563412

00563412

Cisco Systems Expands CiscoPro Line with Remote Access, Internet Gateway and Switching Solutions; Secures Over 700 VARs for Distribution to Mid-Tier Businesses; CiscoPro Products Now Available Worldwide.

Business Wire
DATELINE: SAN JOSE, Calif. Jan 9, 1996 WORD COUNT: 1267

...meet the needs of customers who want networking solutions that are easy to buy, install and manage. The 17 new CiscoPro products fall into three **categories** : **Internet** gateway, access and workgroup. The CiscoPro **Internet Junction** software gateway provides Novell NetWare users with secure, easy to administer **connectivity** to the Internet. CiscoPro access products offer a broad range of ISDN solutions and support a wide variety of

applications, including Internet access, corporate database...

10/3,K/4 (Item 4 from file: 621)
DIALOG(R)File 621:New Prod. Annou. (R)
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00344705

00344705

HUGHES LAN SYSTEMS ANNOUNCES LAT LICENSE AGREEMENT

News Release

DATELINE: MOUNTAIN VIEW, CA December 7, 1992 WORD COUNT: 320

...announced a license agreement with Digital Equipment Corporation for Digital's LAT protocol. The license will apply to Hughes' LlNC/Term and Enterprise Hub (TM) **terminal** servers and the ProLINC (TM) multiprotocol **connectivity** software package.

"We make it a **priority** to provide our customers with easy access to the different protocols used with a **LAN** environment," said Bobbi Murphy, vice president of marketing for Hughes LAN Systems. "The license agreement between Hughes and Digital will facilitate the use of the..."

File 2:INSPEC 1969-1999/May W5
(c) 1999 Institution of Electrical Engineers
File 8:EI Compendex(R) 1970-1999/May W4
(c) 1999 Engineering Info. Inc.
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File 239:Mathsci(R) 1940-1999/May
(c) 1999 American Mathematical Society
File 144:Pascal 1973-1999/May
(c) 1999 INIST/CNRS.
File 77:Conference Papers Index 1973-1999/May
(c) 1999 Cambridge Sci Abs
File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec
(c) 1998 Inst for Sci Info
File 108:Aerospace Database 1962-1999/Apr
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File 233:Microcomputer Abstracts 1974-1999/Jun
(c) 1999 Information Today Incl.
File 103:Energy SciTec 1974-1999/May B2
(c) 1999 Contains copyrighted material
File 62:SPIN(R) 1975-1999/May W2
(c) 1999 American Institute of Physics
File 14:Mechanical Engineering Abs 1973-1999/Mar
(c) 1999 Cambridge Sci Abs
File 35:Dissertation Abstracts Online 1861-1999/Jun
(c) 1999 UMI
File 202:Information Science Abs. 1966-1999/Mar
(c) Information Today, Inc
File 94:JICST-EPlus 1985-1999/Feb W4
(c)1999 Japan Science and Tech Corp(JST)
File 370:Science 1996-1999/Apr W3
(c) 1999 AAAS
File 99:Wilson Appl. Sci & Tech Abs 1983-1999/Apr
(c) 1999 The HW Wilson Co.

Set	Items	Description
S1	5291610	CATEGORI? OR RANK OR PRIORIT? OR RATE OR HIERARCH? OR ORDER OR CLASSIF?
S2	1472108	NODE? ? OR PROCESSOR? ? OR CONTROLLER? ? OR TERMINAL? ? OR BRANCH?? ? OR JUNCTION?
S3	1584792	LINK? OR CONNECT? OR JOIN OR COMBINE
S4	755836	DATABASE? OR DATABANK? OR DATA() (BASE? OR BANK?) OR LIBRARY
S5	184777	INTERNET OR INTRANET OR LAN OR WORLD()WIDE()WEB OR WEB OR - LOCAL()AREA()NETWORK?
S6	3334649	CITATION? OR DOCUMENT? OR REPORT? ?
S7	167949	S2(S)S1
S8	126	S7 AND S3 AND S4 AND S5
S9	16	(S1(5N)S2) AND S3 AND S4 AND S5
S10	12	RD (unique items)

10/3,K/1 (Item 1 from file: 2)

DIALOG(R)File 2:INSPEC

(c) 1999 Institution of Electrical Engineers. All rts. reserv.

6246899 INSPEC Abstract Number: B1999-06-6210R-037, C1999-06-6130M-024

Title: Dynamic storage in resource scarce browsing multimedia applications

Author(s): Elenbaas, H.; Dimitrova, N.

Author Affiliation: Philips Res., Briarcliff Manor, NY, USA

Journal: Proceedings of the SPIE - The International Society for Optical Engineering Conference Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA)

vol.3527 p.362-71

Publisher: SPIE-Int. Soc. Opt. Eng,

Publication Date: 1998 Country of Publication: USA

CODEN: PSISDG ISSN: 0277-786X

SICI: 0277-786X(1998)3527L.362:DSRS;1-V

Material Identity Number: C574-1998-293

U.S. Copyright Clearance Center Code: 0277-786X/98/\$10.00

Conference Title: Multimedia Storage and Archiving Systems III

Conference Sponsor: SPIE

Conference Date: 2-4 Nov. 1998 Conference Location: Boston, MA, USA

Language: English

Copyright 1999, IEE

...Abstract: and the limited memory for temporary caching. We propose an approach for latency optimization in information browsing applications. We proposed a method for flattening hierarchically **linked** documents in a manner convenient for network transport over slow channels to minimize browsing latency. Flattening of the hierarchy involves linearization, compression and bundling of the document **nodes**. After the transfer, the compressed **hierarchy** is stored on a local device where it can be partly unbundled to fit the caching limits at the local site while giving the user availability to the content. This optimal bundling method will work for general **Web** browsing, wireless browsing, as well as video **library** applications. We consider the video **library** browsing in more detail. The video is summarized in a Visual Table of Content (VTOC), which consists of sample multimedia content items such as video...

...Descriptors: **Internet** ;

...Identifiers: hierarchically **linked** documents...

...general **Web** browsing...

...video **library** applications...

10/3,K/2 (Item 2 from file: 2)

DIALOG(R)File 2:INSPEC

(c) 1999 Institution of Electrical Engineers. All rts. reserv.

5969198 INSPEC Abstract Number: C9808-6160Z-029

Title: Some conditions for cost efficiency in hypermedia

Author(s): Westland, J.C.

Author Affiliation: Hong Kong Univ., Hong Kong

Journal: Information Processing & Management vol.34, no.2-3 p. 309-23

Publisher: Elsevier,

Publication Date: March-May 1998 Country of Publication: UK

CODEN: IPMADK ISSN: 0306-4573

SICI: 0306-4573(199803/05)34:2/3L.309:SCCE;1-J

Material Identity Number: I276-98002

U.S. Copyright Clearance Center Code: 0306-4573/98/\$19.00+0.00

Language: English

Copyright 1998, IEE

...Abstract: in multimedia and hypertext have created new opportunities for providing information to business and consumers. Hypermedia has appeared as an important tool for accessing the **Internet**. Prior hypermedia research mainly has recommended design standards for the interface. The current research models the administrative and operating

costs surrounding a hypermedia **database** , and determines seven conditions for the cost justification of hypermedia. These are: (1) higher **linking** costs proportionately reduce the total number of **links** implemented; (2) increasing the benefits from using the **database** increases the total number of **links** proportionately; (3) increasing **database** size results in an increase in the total number of **links** implemented; (4) if the **database** user learns from the **database** slowly, then a larger number of **links** need to be provided; (5) the maximum size of **database** which is justified on cost will increase as the average cost of **linking** each node becomes smaller; (6) the total benefit from usage required in order to cost justify a **database** will decrease as the average cost of **linking** each node becomes smaller; and (7) the maximum size of **database** which is cost justified will increase rapidly as the learning rate increases-large **databases** are more easily justified if the users can be assured of picking up useful information when traversing the **nodes** . The learning **rate** can be increased by careful construction of **links** and nodes so that they are maximally informative.

...Identifiers: **Internet** access...

...hypermedia **database** ; **linking** costs...

...**database** size...

...**database** user...

...large **databases**

10/3,K/3 (Item 3 from file: 2)

DIALOG(R)File 2:INSPEC

(c) 1999 Institution of Electrical Engineers. All rts. reserv.

5744100 INSPEC Abstract Number: C9712-7480-076

Title: Supervision and monitoring system of a blast furnace

Author(s): Remorino, M.; Zecchi, M.

Author Affiliation: SIDERAR S.A.I.C., Buenos Aires, Argentina

Conference Title: Low Cost Automation 1995. (LCA'95). A Postprint volume from 4th IFAC Symposium p.29-36

Editor(s): Paiuk, J.; Weisz, J.P.

Publisher: Pergamon, Oxford, UK

Publication Date: 1996 Country of Publication: UK ix+422 pp.

ISBN: 0 08 042239 X Material Identity Number: XX95-02077

Conference Title: Proceedings of Symposium on Low Cost Automation

Conference Sponsor: IFAC

Conference Date: 13-15 Sept. 1995 Conference Location: Buenos Aires, Argentina

Language: English

Copyright 1997, IEE

...Abstract: running online and offline: stove optimization, mass and heat balance, burden calculation, process calculations and hearth level control; (iv) ancillary services networking-the system is **connected** to the main ancillary services (sinter plant, laboratories, coke plant) by means of dedicated networks which feed data to the **databases** for model control and data analysis and storage. The system is made up of a PC network interconnected to the PLC network (ModBusPlus). All the screen, **connection** and model programming is done in C language. Due to the fact that the system is built on a PC basis, it has high reliability as any PC station can be replaced with another one. This allows the expansion to future **nodes** in **order** to build a whole network for the reduction sector of the plant.

...Descriptors: **local area networks** ;

...Identifiers: **databases** ;

10/3,K/4 (Item 4 from file: 2)

DIALOG(R)File 2:INSPEC

(c) 1999 Institution of Electrical Engineers. All rts. reserv.

5512949 INSPEC Abstract Number: C9704-3355F-003

Title: Information technology in robotics

Author(s): Probst, R.; Kronreif, G.

Author Affiliation: Inst. for Handling Devices & Robotics, Tech. Univ. of Vienna, Austria

Conference Title: The First World Congress on Intelligent Manufacturing Processes and Systems. Proceedings Part vol.1 p.612-20 vol.1

Publisher: Univ. Puerto Rico, San Juan, Puerto Rico

Publication Date: 1995 Country of Publication: Puerto Rico 2 vol. (xii+xx+1399) pp.

Material Identity Number: XX95-00332

Conference Title: Proceedings of 1st World Congress on Intelligent Manufacturing Processes and Systems

Conference Sponsor: Int. Inst. Production Eng. Res.; IEEE

Conference Date: 13-17 Feb. 1995 Conference Location: Mayaguez/San Juan, Puerto Rico

Language: English

Copyright 1997, IEE

...Abstract: of the robot. Controlling the robot with his own controller. The peripheral devices are controlled by a programmable controller which is supervised by the robot **controller**. Controlling is done by a **hierarchical** control structure. In the second part of the paper a hierarchical control structure based on information demands of assembly cells is presented. These demands can be divided into: controlling tasks, supervising tasks, sequence tasks, error handling, statistics. To handle the whole information flow within the cell and to other **connected** system like PPS-Systems or CIM-solutions, we use a Client-Server architecture with a central **database** and interfaces to the subsystems. These interfaces can be basic I/O-lines as well as **local area networks (LAN 's)**. As a first example the last part of the paper describes an assembly cell for assembling flashlights using this control concept.

...Descriptors: **local area networks**

...Identifiers: **local area networks** ;

10/3,K/5 (Item 5 from file: 2)

DIALOG(R)File 2:INSPEC

(c) 1999 Institution of Electrical Engineers. All rts. reserv.

5091352 INSPEC Abstract Number: B9512-6140C-209, C9512-5260B-183

Title: Distributed optimization of codebooks

Author(s): Piscaglia, P.; Macq, B.; Maes, P.

Author Affiliation: Univ. Catholique de Louvain, Belgium

Journal: Signal Processing: Image Communication vol.7, no.3 p. 211-23

Publication Date: Sept. 1995 Country of Publication: Netherlands

CODEN: SPICEF ISSN: 0923-5965

U.S. Copyright Clearance Center Code: 0923-5965/95/\$9.50

Language: English

Copyright 1995, IEE

Abstract: Nowadays, many computer facilities are constituted by a network of general-purpose workstations. The paper shows how to **combine** the available resources of this network in order to deal efficiently with time-consuming image processing algorithms. It is shown how to distribute the processes, by using a specialized **library**, namely PVM (parallel virtual machine). An example is given: the LBG algorithm for codebooks optimization has been revisited in order to distribute efficiently the process. A major point has been to minimize the required communication bandwidth between the **processors**. Some adaptations are proposed in **order** to synchronize **processors** with different speeds (load balancing) better. An implementation giving to the process robustness against failures is also described.

...Descriptors: **local area networks** ;

...Identifiers: **specialized library** ;

10/3,K/6 (Item 6 from file: 2)

DIALOG(R)File 2:INSPEC

(c) 1999 Institution of Electrical Engineers. All rts. reserv.

04064281 INSPEC Abstract Number: B9202-6210L-344, C9202-5620L-128

Title: LAN interconnect using X.25 network services

Author(s): Barrett, J.J.; Wunderlich, E.F.

Author Affiliation: AT&T Bell Lab., Holmdel, NJ, USA

Journal: IEEE Network vol.5, no.5 p.12-16

Publication Date: Sept. 1991 Country of Publication: USA

CODEN: IENEET ISSN: 0890-8044

U.S. Copyright Clearance Center Code: 0890-8044/91/0900-0012\$01.00

Language: English

Title: LAN interconnect using X.25 network services

Abstract: The use of X.25 for medium-speed applications (<56 kb/s) in personal computer **local area networks** (LANs) is considered, focusing on a number of popular **LAN**-based applications that are appropriately matched for X.25 services. For architectural reasons, they are broadly classified into two **categories**: PC-to-host access (**terminal** emulation), as in token ring, to synchronous data **link** control (SDLC) hosts using host gateways; and client-server applications, such as distributed **databases** that are bridged or routed. For each class of applications, the traffic characteristics are discussed, it is explained how an efficient interconnection can be accomplished, and some insight is provided into how **LAN** internetworking devices (routers and gateways) function in an X.25 environment.

Descriptors: **local area networks** ;

...Identifiers: **local area networks** ; ...

...**LAN** internetworking devices

10/3,K/7 (Item 7 from file: 2)

DIALOG(R)File 2:INSPEC

(c) 1999 Institution of Electrical Engineers. All rts. reserv.

02877010 INSPEC Abstract Number: C87027903

Title: The challenge of integrating hierarchical control across distributed processors on a plant-wide network

Author(s): Metzger, D.P.; McCarthy, J.J.

Author Affiliation: Honeywell Inc., Phoenix, AZ, USA

Conference Title: Advanced Control Techniques Move from Theory to Practice. Techniques that have Made it. Proceedings of the Twelfth Annual Advanced Control Conference p.137-43

Editor(s): Morris, H.M.; Kompass, E.J.; Williams, T.J.

Publisher: Control Engineering, Barrington, IL, USA

Publication Date: 1986 Country of Publication: USA 166 pp.

ISBN: 0 931682 22 3

Conference Sponsor: Purdue Univ.; Control Eng

Conference Date: 15-17 Sept. 1986 Conference Location: West Lafayette, IN, USA

Language: English

Title: The challenge of integrating hierarchical control across distributed processors on a plant-wide network

Abstract: With the advent of plant-wide networks and **database** integration, the extension of process control strategies into the higher levels of the plant processing hierarchy approaches full realization. The **linking** of control processors distributed across high speed local networks with microprocessor-based loop processors at the sensor level raises new considerations for architectural design tradeoffs...

...Descriptors: **local area networks** ;

...Identifiers: **local area networks** ; ...

...**database** integration

10/3,K/8 (Item 1 from file: 6)
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1960454 NTIS Accession Number: AD-A307 821/9

Indexing and Retrieval in Digital Libraries. Developing Taxonomies for a Repository of Decision Technologies

(Master's thesis)

Rogers, P. M.

Naval Postgraduate School, Monterey, CA.

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DecisionNet is an online **Internet** -based repository of decision technologies. It **links** remote users with these technologies and provides a directory service to enable search and selection of suitable technologies. This thesis develops classification methods to enable...

... for software and other online repositories are examined. Criteria and principles for a good taxonomy are established and systematically applied to develop DecisionNet taxonomies. A **database** design is developed to store the taxonomies and to classify the technologies in the repository. User interface issues for navigation of a hierarchical classification system are discussed. A user interface for remote **World Wide Web** users is developed. This user interface is designed for browsing the taxonomy structure and creating search parameters online. Recommendations for the implementation of a repository...

Descriptors: Digital systems; *Information retrieval; *Classification; *Online systems; **Data bases**; Algorithms; Interfaces; Parameters; Theses; Searching; User needs; Storage; **Hierarchies**; Remote **terminals**

10/3,K/9 (Item 1 from file: 108)
DIALOG(R)File 108:Aerospace Database
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02288316 N96-35727

Medical Image Database Access Via Satellite (MIDAS)

LONG, L. RODNEY; THOMA, GEORGE R.; et al.

National Library of Medicine, Bethesda, MD.

CORPORATE CODE: NJ578842

In National Library of Medicine, Advanced Communication Technology Satellite Results Conference p (SEE N96-35699 12-32)

May 1996

Medical Image Database Access Via Satellite (MIDAS)

The Communications Engineering Branch of the National **Library** of Medicine (NLM) has planned very small aperture **terminal** (VSAT) and high data **rate** (HDR) experiments using the Advanced Communications technology Satellite (ACTS) communications technology...

...Experiments are planned to assess new methods for improving transmission control protocol/**internet** protocol (TCP/IP) performance, and in using the satellite **link** as a method to deliver medical **database** information, consisting of both text and image data...

10/3,K/10 (Item 1 from file: 233)
DIALOG(R)File 233:Microcomputer Abstracts
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00420667 96CB04-007

LANs, WANs, CD-ROMs, and networking -- The idea of a CD network was to allow us to network CD-ROMs not only at the local library but also in branch libraries

Schuyler, Michael

Computers in Libraries , April 1, 1996 , v16 n4 p40-43, 4 Page(s)

ISSN: 1041-7915

Company Name: Logicaft

Product Name: OmniWare

LANs, WANs, CD-ROMs, and networking -- The idea of a CD network was to allow us to network CD-ROMs not only at the local library but also in branch libraries

...concentrating on the Windows side of search engines. Indicates that a CD network was designed to let users network CD-ROMs both at the local library and in branch libraries, and they are **connected** to the central library via frame relay on 56K lines. Attention is given to Logicaft's OmniWare product, consisting of both hardware and software components, which enables you to access CD-ROMs by telnet-ing into them using the **Internet** . Recommends that the method of getting data to OPAC **terminals** must change in **order** to be able to place CD-ROMs on a WAN with **Internet** protocols, although networking CD-ROMs with Novell is a straightforward procedure. (jo)

Descriptors: **Local Area Networks** ; **CD-ROM**; **Library** ; Wide Area Networks; Networks

10/3,K/11 (Item 1 from file: 103)

DIALOG(R)File 103:Energy SciTec

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03131521 EDB-91-068956

Title: Group communication in bus-based computer networks

Author(s)/Editor(s): McKinley, P.K.

Corporate Source: Illinois Univ., Urbana, IL (USA)

Publisher: Urbana, IL (US) Univ. of Illinois

Publication Date: 1989 (154 p)

Language: In English

Abstract: In recent years, there has been an increase in the number of group-based applications composed of cooperative processing entities. Examples include multimedia teleconferencing, distributed **databases** , distributed operating system services, cooperating processes in automated control, and parallel processing. The communication among processes in group-based applications typically involves multiple destinations and...

...temporally local. An increasing number of networks are composed of multiple-access media, or busts. A bus-based network is one in which every communication **link** is a multiple-access medium. Examples of bus-based networks are found in many types of computer networks, including metropolitan area networks, interconnected **local area networks** , multichannel **local area networks** , and interconnection networks for parallel processors. This thesis addresses the problem of supporting group communication in bus-based computer networks. The work presented in the...

...two related parts. The first part addresses the problem of constructing multicast trees in bus-based networks. A multicast tree is a collection of communication **links** spanning the processors on which process group members reside. Messages entering the tree from one group member are routed and copied as necessary by intermediate **nodes** in **order** to be delivered to every group member. Because of the multiple-access property of the media, the problem of constructing multicast trees in bus-based...

10/3,K/12 (Item 1 from file: 370)

DIALOG(R)File 370:Science

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00500562 (USE 9 FOR FULLTEXT)

Mapping the Protein Universe

Holm, Liisa; Sander, Chris

The authors are in the European Bioinformatics Institute, European
Molecular Biology Laboratory, Hinxton Hall, Cambridge CB10 1SD, UK.
Science Vol. 273 5275 pp. 595

Publication Date: 8-02-1996 (960802) Publication Year: 1996

Document Type: Journal ISSN: 0036-8075

Language: English

Section Heading: Articles

Word Count: 6817

(THIS IS THE FULLTEXT)

...Abstract: to discover unexpected evolutionary relations, reaching back billions of years, between protein molecules. Protein shape comparison also improves tools for identifying gene functions in genome **databases** by defining the essential sequence-structure features of a protein family. Finally, an exhaustive all-on-all shape comparison provides a map of physical attractor...

...Text: This exploitation of evolutionary **connectivity** has become possible because of a wealth of molecular data about proteins from many different species. To date, biologists have read the complete nucleotide (and...

...Comparison by Sequence or by Shape? Exploiting the observation of evolutionary **connections** between proteins in order to predict some aspects of structure or function is simple in principle. If a protein is found to be evolutionarily related...

...from that of the other, with varying degrees of accuracy, depending on the evolutionary distance between them. The question then arises as to how evolutionary **connections** are best detected: by amino acid sequence comparison in 1D or by shape comparison in 3D...Searching 3D **Databases** Beyond comparing two proteins, researchers also want to place new protein structures relative to the universe of all protein shapes, or at least relative to all known protein structures. This task is similar to that of finding a match to a fingerprint in a **database**, but more complicated in that similarities, and not just identities, are of interest. In particular, for a protein structure used as a query, researchers want...

...that score above some similarity threshold (for example, such as a threshold defined in terms of statistical significance). Our strategy for efficient searches in the **database** of 3D structures (B2) is to first scan for obvious similarities using fast (but, in general, less accurate) procedures and then to rescan for more...

...similar in shape. The algorithm works by storing, in a way convenient for geometrical lookup, a list of spatial relations between such vectors taken from **database** proteins (B8). Here, lookup (or "hashing") is conceptually similar to looking up names in a telephone book. The lookup procedure matches the vector relations taken...

...in the stored list and proceeds to sample a limited set of spatial superimpositions whenever enough matches are found between the query protein and a **database** protein. Finally, a dynamic programming step refines these superimpositions and generates detailed residue-level alignments. The search of one structure against the structure **database** of several thousand structures typically takes only about 5 min on a computer workstation. Other simplified methods achieve similar speed (B7). In this way, a...corresponds to the exact global optimum of the objective function (Fig. 3B). Continuing the procedure past the global optimum yields suboptimal solutions in monotonically decreasing **order**. Our adaptation of this **branch**-and-bound procedure replaces the sequence of protein A by the trace of residue centers of protein A and thus tests all residue-segment pairings...

...For reasons of efficiency, we couple this **branch** -and-bound algorithm to the **hierarchical** decomposition of a full structure into smaller compact units [similar to "folding unit" decomposition or "domain" decomposition (B11)]; that is, we perform the comparison in...

...residues in protein A onto segments in protein B are pruned before they are examined explicitly. For example, comparing the structures of transducin-a [Protein **Data Bank** code 1tag, 16 segments (B12)] with that of Ras p21 [5p21, 166 residues (B13)] leads to a nominal search of 10.sup(35) spatial arrangements...

...The **database** search methodology containing these two algorithms, plus other tools, is made available over the **Internet** to users with a coordinate data set describing a 3D protein structure in hand (B14) . The searches aim to address questions such as which known...

...efficient algorithms of shape comparison and their implementation in computer programs are crucial for coping with the currently more than 4000 structures in the Protein **Data Bank** (B2) . Currently, **Internet** servers rather than printed publications are the preferred medium of dissemination (B16) . We have recently used shape comparison algorithms to perform an exhaustive all-on...

...overview of the currently known parts of the protein universe and, if possible, to arrive at a classification of architectural types. In processing the current **database** , two problems arise, one technical and the other conceptual in nature...

...these have essentially complete structural overlap and in most cases similar function (B17) . Removing such sequence redundancy from the April 1996 release of the Protein **Data Bank** leaves a set of 740 representative proteins of known structure. Many pairs in this set are still structurally similar to each other, in spite of...large units and (ii) of a physical decomposition of protein structure into a tree of putative folding units at all size levels (B18) . Given a **database** of protein shapes, pairwise structural similarities, and alternative decompositions into substructures, the notion of maximal recurrence is implemented by selection of a set of substructures for which the sum of similarities is maximized across the **database** . As a result, the 740 proteins with unique sequences are split into 1048 domains...

...in our opinion, ideal. We chose to group domains similar in shape into "domain fold" classes or simply "fold" classes by a process of average **linkage** clustering (B19) . Disregarding small, irregular domains and terminating clustering at an empirically chosen cutoff in similarity, the result is a set of fold classes whose...

...continuously monitor the rise in structural knowledge in terms of the appearance of new entries, new protein families, and new fold classes in the Protein **Data Bank** (B2) ...Simple extrapolation leads us to expect 10,000 **database** entries, 1600 sequence-unique representative structures (sequence families), and 400 fold classes by the end of 1997. If current trends continue exponentially and without saturation...

...dominated by five densely populated regions, which we call attractors (Fig. 5) . Although the current distribution of folds is the result of several effects, including **database** bias, we put forward the hypothesis that these attractors represent both dominant folding pathways and evolutionary sinks that are the result of physical constraints...in the 2D projection of shape space (Fig. 5A) contain domains with similar secondary structure composition and characteristic topological motifs (secondary structure elements plus loop **connections**) . In the folded structures, the shared motifs are not exposed to solvent, so they are likely to form early on in the folding process and...

...Discovering Evolutionary **Links** As more protein structures are determined, the placement of each new protein in shape space makes a contribution to the completion of the map and...

...substructure, but also a sequence signature pattern that maps to the nucleoside triphosphate binding site in the conserved domains (Fig. 5). Pattern searches in sequence **databases** led to the identification of five additional families of nucleotidyltransferases that are predicted to contain the same substructure responsible for the nucleotide transfer reaction, which...

...Most evolutionary **links** are identified on the basis of sequence similarity, but the most interesting new discoveries are the result of explorations in the "twilight zone" of sequence...

...The procedure has these steps: structural alignment in 3D of two or more known structures, definition of the pattern of conserved residues in 3D, sequence **database** searches using that pattern to identify additional candidates, multiple sequence alignment in each candidate family to check consistency of conservation of the search pattern, building...Figure F1
Caption: Protein architecture. The tramtrack protein [Protein **Data Bank** entry 2drp (B30)] is a small protein (525 heavy atoms, 63 residues, and 6 elements of secondary structure), yet it exhibits typical modular protein architecture...

...alignment of amino acid sequences. Here, the comparison of the tramtrack protein with another zinc finger protein, the human enhancer-binding protein MBP-1 [Protein **Data Base** entry 1bbo (B32)], is used as an example. (A) In the 3D comparison, the problem is to find a translation and rotation of one molecule (red: 1bbo) onto the other (blue: 2drpA). The 3D superimposition (residue centers only, green lines **join** equivalenced residue centers, zinc atoms as spheres) is not exact because of an internal rotation of the two zinc finger domains relative to one another...best match of residues in protein B onto a predefined set of residues in protein A (the match is illustrated by the circle-ended line **connecting** the single square in matrix A with a set of candidate squares in matrix B). The best match is the one with the maximal pair...

...terms of these domains (within the limits of similarity within a domain class). Domains ranked about 170 or higher occur only once in the current **database** (singlets). (B) Examples of frequently observed fold classes, with one class from each of the attractor regions in Fig. 5 (each attractor region contains several...region are not shown, but the most frequently occurring are shown in Fig. 5B. (C) Growth and redundancy of protein 3D structures in the Protein **Data Bank** (B2) . Entry: one of currently more than 4000 sets of protein coordinates in the PDB. Family: collection of proteins set as equivalent if pairwise sequence...

...domains (protein substructures) are covered by 16 fold classes (shown as topology diagrams; a, a helix segment; (beta) , (beta) strand segment; thick bar, parallel chain **connection** between segments; thin bars, antiparallel **connection** ; arc, a helices crossing at roughly right angles). Although each fold class has individual features, most fold classes map to five attractor regions (peaks I...

...unit has a preferred handedness determined by polymer physics and the natural twist of (beta) strands. Attractor II contains a variety of helical folds. The **connectivity** of elements in the folds of attractors III and IV contains meander motifs suggestive of the collapse of a long hairpin, either of (beta) strands...

...alternating with a helical pair, ((beta) a (beta)).inf(2) (B36) . The (beta) zigzag motif of attractor V is simply a series of antiparallel hairpin **connections** between sequentially adjacent strands. Elementary polymer physics indicates that interactions in space between regions of the chain that are close in sequence are much more...

...about 13 in porin barrels). Fold classes other than the most populated 16 are not shown but are accessible from the Dali service over the **Internet** (B16...

...Figure Removed
Removed

Figure F6

Caption: Evolutionary adaptation of enzyme function. (A) Discovery of an essential structure-function feature by shape comparison. A structure **database** search with DNA polymerase (beta) detects kanamycin nucleotidyltransferase (rather than other known DNA or RNA polymerases) as the nearest neighbor in fold space and reveals conserved residues and structural features supporting the active site. Following up the lead provided by structure **database** searching with profile searches in sequence **databases** resulted in the identification of the same characteristics in a large superfamily of nucleotidyltransferases. The biological functions of member families range from DNA repair to...

References and Notes:

...1. For more information, see the Swiss-Prot **database** at <http://expasy.hcuge.ch> and the Trembl **database** at <ftp://embl-ebi.ac.uk/pub/databases/trembl...>

...data sets are accessible at www.pdb.bnl.gov. The Protein Data Bank was founded in 1972 as the global repository for macromolecular structure data...part of the query structure or asserts that no significant similarity has been found. Precalculated mutual similarities for all known protein structures in the Protein Data Bank (B2) are also available from <http://www.embl-heidelberg.de/dali> and can be viewed as alignments or as 3D views with the use of a Web browser...16. These servers provide Internet access to catalogs of protein 3D structures: Protein Data Bank (<http://www.pdb.bnl.gov>), Dali (<http://www.embl-heidelberg.de/dali>), Scop (<http://scop.mrc-lmb.cam.ac.uk/scop/>), and CATH (<http://www...>)

...18. The mean and standard deviations of similarity scores were calibrated against pairwise all-on-all comparisons in a **database** of 220 proteins, as a function of protein size. Shape similarity quantified with the distance matrix comparison scores (B6) can then be expressed in terms...

...19. Average linkage clustering assumes that one knows all pairwise similarity scores and proceeds iteratively by grouping the two most similar domains in the set into a class³⁷. The most recent fold classes among newly determined protein structures as detected by the Dali search system are on Internet under <http://www.embl-ebi.ac.uk/dali/newfold/> (for a period of 1 year after publication of this issue). We thank R. Schneider, M...

=> s linked database#

```
      148011 LINKED
      20312 DATABASE#
L1      43 LINKED DATABASE#
      (LINKED(W) DATABASE#)
```

=> s l1 (p) node#

```
      67342 NODE#
L2      1 L1 (P) NODE#
```

=> d l1 1-

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=> s rank?(3a)node#(p)database#

17527 RANK?
67342 NODE#
20312 DATABASE#

L3 4 RANK?(3A)NODE#(P)DATABASE#

=> d 1-

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=> s rank?(3w)node#(p)database#

```

17527 RANK?
67342 NODE#
20312 DATABASE#
L4      3 RANK?(3W)NODE#(P)DATABASE#

```

=> d 1-

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2. 5,704,017, Dec. 30, 1997, Collaborative filtering utilizing a belief network; David E. Heckerman, et al., 706/12, 45, 52 [IMAGE AVAILABLE]
3. 5,495,479, Feb. 27, 1996, Method and apparatus for an automatic decomposition of a network topology into a backbone and subareas; Claude Galaand, et al., 370/404, 238, 400, 411 [IMAGE AVAILABLE]

=> s assign?(2w)rank(2w)node#

```

289478 ASSIGN?
9499 RANK
67342 NODE#
L5      2 ASSIGN?(2W)RANK(2W)NODE#

```

=> d 1-

1. 5,450,535, Sep. 12, 1995, Graphs employing clusters; Stephen C. North, 345/440 [IMAGE AVAILABLE]
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=> s assign?(2w)rank(p)database#

```

289478 ASSIGN?
9499 RANK
20312 DATABASE#
L6      5 ASSIGN?(2W)RANK(P)DATABASE#

```

=> d 1-

1. 5,752,241, May 12, 1998, Method and apparatus for estimating

	Welcome Joyce Baker	Manage Alerts & Requests	View Alerts	New Request
Modify	Save	Alert	Sort: % Rank	1/1 12/31 Newest
			12/31 1/1 Oldest	Source Subject
			Draw: Graph	Tech BarChart
			Print...	Similar Docs

Results (by Rank) for: method for node ranking in a linked database 25 documents returned

1. **A fuzzy approach to accessing accident databases**
79% Chung, P.W.H. ; Jefferson, M. • *Applied Intelligence: The International Journal of Artificial Intelligence, Neural Networks, and Complex Problem-Solving Technologies* • 09/01/98 • 2 pages (270 words) • [SUMMARY](#)
The paper is concerned with accessing information from accident databases. It discusses the
2. **Skip lists in C++. (Technology Tutorial)(Tutorial)**
72% Whitney, Bill • *C/C++ Users Journal* • 11/01/98 • 13 pages (3310 words) • [SUMMARY](#)
If you're like me, you're always looking for an alternative data structure that not only performs admirably, but is easy to implement and understand as well.
3. **Expert Network: effective and efficient learning from human decisions in text categorization and retrieval**
70% Yiming Yang • *SIGIR '94. Proceedings of the Seventeenth Annual International ACM-SIGIR Conference on Research and Development in Information Retrieval* • 01/01/94 • 2 pages (270 words) • [SUMMARY](#)
Expert Network (ExpNet) is our approach to automatic categorization and retrieval of natural language texts.
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68% FUKUDA, MANABU; KATSUMOTO, MICHIAKI; SHIBATA, YOSITAKA • *Proceedings of the 29th Hawaii International Conference on System* • 01/01/96 • 2 pages (340 words) • [SUMMARY](#)
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 This paper describes an interface for querying databases integrating versions (DBIV). This
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 Describes a method of learning a user's field of interest and the effects of applying this method to information retrieval.
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60% Kotropoulos, C. ; Tefas, A. ; Pitas, I. • *Proceedings 1998 International Conference on Image Processing. ICIP98 (Cat. No.98CB36269)* • 01/01/98 • 2 pages (190 words) • [SUMMARY](#)
 Two variants of dynamic link matching based on mathematical morphology are developed and tested for frontal face authentication, namely, the morphological dynamic link architecture and the morphological signal decomposition-dynamic link architecture.
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60% De-Medonsa, E. ; Kraus, S. ; Shifan, Y. • *IEEE Transactions on Systems, Man and Cybernetics, Part B (Cybernetics)* • 04/01/99 • 2 pages (200 words) • [SUMMARY](#)
 In this paper, a model which combines relational databases with self-processing networks is proposed in order to improve the performance of very large databases.
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60% Fukuda, M. ; Katsumoto, M. ; Shibata, Y. • *Proceedings of the Twenty-Ninth Hawaii International Conference on System Sciences* • 01/01/96 • 2 pages (230 words) • [SUMMARY](#)
 We introduce a dynamic hypermedia system (DHS) for distributed design image databases that can provide simple and flexible user access capabilities based on perceptual link, so called Kansei link method.
- 20. **Bridge model: an integrated database model for office information systems**

60% Ozawa, H. ; Anzai, Y. ; Aiso, H. • *Transactions of the Information Processing Society of Japan* • 01/01/92 • 2 pages (150 words) • [SUMMARY](#)
 Discusses dynamic and static connections within relational databases and the facilities of a link icon in the hypertext.
- 21. **Helping the user to select a link**

60% Tomek, I. ; Maurer, H. • *Hypermedia* • 01/01/92 • 2 pages (170 words) • [SUMMARY](#)
 Links are among the distinguishing features of hypermedia and much research resolves around them.
- 22. **Rising Relevance in Search Engines.**

59% Notess, Greg R. • *Online* • 05/01/99 • 9 pages (2900 words) • [SUMMARY](#)
 Back in the medieval days of the Internet, when a search used engine was still the software used to access bibliographic or other databases with no connection to the Internet, there was some fascinating research on statistical algorithms for sorting the output of a full-text search by projected relevance.
- 23. **Ready for prime time?(Microsoft Windows NT operating system) (Product Development)**


59% Stiglich, George • *Telephony* • 07/27/98 • 7 pages (1800 words) • [SUMMARY](#)
 Are Microsoft Windows NT server-based computers ready for prime-time deployment in intelligent network systems?
- 24. **Using Informix DataBlades to facilitate E-commerce.(includes related article on executive summary) (Product Support)(Tutorial)**

59% Lasater, Bo • *Databased Web Advisor* • 03/01/98 • 14 pages (3600 words) • [SUMMARY](#)
 Orchestrate all the capabilities an e-commerce site requires into a single, coherent, manageable system.
- 25. **A hypermedia-based design image database system using a perceptual link method**

59% Shibata, Y. ; Fukuda, M. ; Katsumoto, M. • *Journal of Management Information Systems* • 12/01/96 • 2 pages (280 words) • [SUMMARY](#)
 The authors introduce a hypermedia-based distributed design image database system that can provide simple and flexible user access capabilities based on the "kansei" link method.

Sort:

 Draw:



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	Welcome Joyce Baker	Manage Alerts & Requests	View Alerts	New Request							
Modify	Save	Alert	Sort: % Rank	1/1 12/31 Newest	12/31 1/1 Oldest	Source	Subject	Draw: Graph	Tech BarChart	Print...	Similar Docs
Rank: 9 / Rel: 62%		Previous	Results	Next	Summary						

A parallel algorithm for optimal node ranking of a binary tree
 Sung Kwon Kim • *Journal of the Korea Information Science Society*
 Vol: 19 Issue: 4 Page: 394-9 • 07/01/92

Most Relevant Section
Document Citation

The author considers the following. Let T be a tree with n nodes. One wishes to label each node v of T with a non-negative integer, $RANK(v)$, so that for any two nodes u, v with $RANK(u)=RANK(v)$ there must be another node x with $RANK(x)<RANK(v)$ on the path between them. Such a labeling is called a **node ranking** of T . Many different **node rankings** are possible for T ; among them, one which minimizes the maximum label used is called an optimal **node ranking** of T . He presents a parallel algorithm for finding an optimal **node ranking** of T when T is a binary tree. It runs in $O(\log n)$ time using n processors on the CREW PRAM.

Additional Information:

Descriptors: computational complexity ; parallel algorithms ; trees (mathematics)
 Identifiers: time complexity ; parallel algorithm ; optimal **node ranking** ; binary tree ; labeling ; CREW PRAM
 Document Type: Journal Paper
 Language: Korean
 Number of References: 6
 Country of Publication: South Korea
 International Standard Serial Number: 0258-9125

Document Rank: 9

Headline/Title: A parallel algorithm for optimal node ranking of a binary tree

Author(s): Sung Kwon Kim

Date: 07/01/92

Source: Journal of the Korea Information Science Society

Volume/Issue/Pg: Vol: 19 Issue: 4 Page: 394-9

Database: IEE/INSPEC


Num. Pages: 2 (160 words)

Accession Num: 4293368

MNIS Document: 137822

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Rank: 9 / Rel: 62%		Previous	Results	Next	Summary						
Modify	Save	Alert	Sort: % Rank	1/1 12/31 Newest	12/31 1/1 Oldest	Source	Subject	Draw: Graph	Tech BarChart	Print...	Similar Docs

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The screenshot shows the DR-LINK web interface. At the top, there is a navigation bar with buttons for 'Welcome Joyce Baker', 'Manage Alerts & Requests', 'View Alerts', and 'New Request'. Below this is a toolbar with various icons for 'Modify', 'Save', 'Alert', 'Sort', 'Rank', 'Newest', 'Oldest', 'Source', 'Subject', 'Draw', 'Graph', 'Tech BarChart', 'Print...', and 'Similar Docs'. At the bottom of the toolbar, it displays 'Ranks: 4 / Rel: 68%' and navigation buttons for 'Previous', 'Results', 'Next', and 'Summary'.

**PERCEPTIONAL LINK METHOD BASED ON DYNAMIC
HYPERMEDIA SYSTEM FOR DESIGN IMAGE DATABASE
SYSTEM**

Most Relevant Section
Document Citation

FUKUDA, MANABU; KATSUMOTO, MICHIAKI; SHIBATA,
YOSITAKA • *Proceedings of the 29th Hawaii International
Conference on System* • 01/01/96

In this paper, we introduce a Dynamic Hypermedia System (DHS) for distributed design image **databases** that can provide simple and flexible user access capabilities based on perceptual **link**, so called Kansei **link method**. As a proof of concept, we have developed a prototype system incorporating the DHS model. Dubbed the Textile Design Image **Database System**, this **database** aids designers using apparel CAD-systems in different locations, collaborating or working separately, in the design of clothes, including kimonos. Our purpose has been to create a **database** that will allow each designer to make the best use of his or her creativity and originality- his or her (IR) style and sensitivity to beauty, (IS) J or Kansei in Japanese.

In our DHS, Metanodes are defined as abstract **nodes** and Metalinks are defined as flexible Kansei **links** respectively. Metanodes and Metalinks are combined to organize a dynamic hypermedia space from which users can easily retrieve desired design image objects by querying a knowledge agent. The knowledge agent, utilizing the knowledge-base, sets up **links** from Kansei word objects provided by the user to suitable design image objects among the multimedia **databases** distributed over the network. The knowledge agent also performs query conversion of individual users (IU) J subjective Kansei (unique, subjective use of Kansei words) into objective Kansei words using each users (IU) J individual (IR) Juser model. (IS) J These objective Kansei words are then converted to equivalent color values. Color value is the means by which all stored design images are characterized. This dynamic **linking** of Kansei word objects to equivalent design images allows individual users (IU) J Kansei to influence the retrieval process. The sophisticated and flexible CAD Systems of the future will require multimedia **database** systems with cooperative supporting capabilities similar to those of our Kansei system. (author)

Additional Information:

Keywords:
Sciences (HICSS-29)

Document Rank: 4

Headline/Title: PERCEPTIONAL LINK METHOD BASED ON DYNAMIC HYPERMEDIA SYSTEM FOR DESIGN IMAGE DATABASE SYSTEM

Author(s): FUKUDA, MANABU; KATSUMOTO, MICHIAKI; SHIBATA, YOSITAKA

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Num. Pages: 2 (340 words)

Accession Num: 43075

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Previous Results Next Summary

Modify Save Alert Sort: % Rank 1/1 12/31 12/31 1/1 Source Subject Draw: Graph BarChart Print Similar Docs

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A hypermedia-based design image database system using a perceptual link method

Shibata, Y. ; Fukuda, M. ; Katsumoto, M. • *Journal of Management Information Systems* Vol: 13 Issue: 3 Page: 25-43 • 12/01/96

Most Relevant Section
Document Citation

The authors introduce a hypermedia-based distributed design image **database** system that can provide simple and flexible user access capabilities based on the "kansei" **link method**. As proof of this concept, they have developed a prototype distributed multimedia information network incorporating the DHS model. Dubbed the Textile Design Image **Database System** (TDIDS), this **database** aids designers using apparel computer-aided design (CAD) systems in different locations, collaborating or working separately, in the design of clothes, including kimonos. Their purpose has been to create a **database** that will allow each designer to make the best use of his or her creativity and originality-his or her "style and sensitivity to beauty", or, in Japanese, kansei. In the hypermedia system, "metanodes" are defined as abstract **nodes** that are dynamically organized by multimedia objects, while "metalinks" are defined as flexible kansei **links**. Metanodes and metalinks are combined to organize a dynamic hypermedia space from which users can easily retrieve desired design image objects by querying a knowledge agent. The knowledge agent, utilizing the knowledge base, creates **links** from kansei word objects provided by the user to suitable design image objects among those stored on multimedia **databases** distributed across the network. The knowledge agent also performs query conversion of individual users' subjective kansei (idiosyncratic, subjective use of kansei words) into objective kansei words using each user's own user model.

Additional Information:

Descriptors: CAD ; colour ; distributed **databases** ; hypermedia ; multimedia computing ; query processing ; textile industry ; visual **databases**

Identifiers: color values ; perceptual **link method** ; hypermedia-based distributed design image **database** system ; user access ; kansei **link method** ; distributed multimedia information network ; Textile Design Image **Database System** ; apparel CAD systems ; clothes design ; creativity ; originality ; metanodes ; abstract **nodes** ; multimedia objects ; metalinks ; dynamic hypermedia space ; design image object retrieval ; knowledge agent querying ; query conversion ; subjective kansei ; objective kansei words ; user model

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Num. Pages: 2 (280 words)

Accession Num: 5569160

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	Welcome Joyce Baker	Manage Alerts & Requests	View Alerts	New Request							
Modify	Save	Alert	Sort: % Rank	1/1 12/31 Newest	12/31 1/1 Oldest	Source	Subject	Draw: Graph	Tech BarChart	Print...	Similar Docs
Rank: 22 / Rel: 59%	Previous	Results	Next	Summary							

Rising Relevance in Search Engines.

Notess, Greg R. • *Online Vol: 23 Issue: 3* • 05/01/99

Most Relevant Section
Document Citation

Back in the medieval days of the Internet, when a search used engine was still the software used to access bibliographic or other **databases** with no connection to the Internet, there was some fascinating research on statistical algorithms for sorting the output of a full-text search by projected relevance. In the bibliographic realm, search output is typically sorted in reverse chronological order. Other available sort options might include an alphabetical arrangement by a specific field, such as author, title, or publication.

Efforts at sorting by relevance developed more sophistication even as the Internet moved from its computer science and defense industry roots into the popular consciousness. In some cases, output **ranked** by relevance score proved to be quite effective in research settings. Thus, in the early days of development of the Web search engines, the preferred output, if not the only seemingly sensible output, relied on relevance scores. The standard sorts used by bibliographic **databases** were not helpful with the mass of Web pages. Why sort by date when all the Web pages had been written in the past year? The HTML title element was (and often continues to be) too inconsistently used to make an alphabetical title sort very meaningful. Most Web pages had and continue to have no fielded author designation for use in sorting.

On the other hand, sorting by %RLs or domain name was certainly a possibility. Yet once again, in the early days of Web development, the unofficial standard of www.name.com was just beginning. Most Web pages were on sites with less meaningful names, such as xxx.lanl.gov or l2vbiol.stateu.edu or physik.technik.ch or just an IP number.

Therefore, in the early days of the Web search engines, only one option made sense, and that was relevance **ranking**. Throw a search word or two at these mammoth indexes containing words published on Web pages, and the list of hits would all be sorted by their relevance "score." The scores intended to represent how relevant the hit was to your search.

The idea was excellent. Since **databases** are so large that many searches result in thousands, if not millions of hits, just deliver the most relevant pages first--no one would be expected to manually browse millions of hits. Instead, they would only look at the first few displayed.

Unfortunately, with the disparate nature of Web pages, wide variations in file sizes, and a complete spectrum of subjects, both scholarly and mundane, determining relevance automatically is no easy task. On some searches, these early Web search engines worked successfully, providing **links** to pages that met or came close to meeting the searchers' information needs. On other searches, the relevant hits were buried deep with low relevance scores.

STANDARD RELEVANCE

The precise **methods** that each search engine uses for determining the relevance score (and thus the **ranking**) are closely guarded trade secrets. However, some general principles are discussed in their documentation or are obvious from search results.

Term frequency, positioning, weighting, and proximity are all common **ranking** criteria. The frequency of a term can be considered in several ways. Pages that have the term many

times **rank** higher, but using only this approach may artificially raise the **ranking** of very long pages that contain many words. This is sometimes evident on Web search engines when a very long page, such as a log file, is **ranked** high. A more helpful approach is where the frequency of the term is compared to the total number of words on the page.

Term positioning also certainly has a role. When a search term is found in certain sections of a Web page, it is considered more important. For example, various search engines will increase the relevance of a page if a term is found in one or more of the following areas: title, the meta keywords, meta description, first header, or first paragraph. Some search engines will ignore some of these areas while others place a larger emphasis on them. For example, Excite ignores terms in the metatags.

Term weighting refers to the practice of making some words more important than others. Infrequently used terms that do occur on certain pages would get more weight than more common terms on those pages. Stopwords are terms that receive no weight. Even on search engines that do not have stopwords, very common words will likely have a very low weight.

On searches that use more than one word, the proximity of the search terms to each other will affect the relevance scores. At a basic level, the closer the search terms are to each other, the more relevant the Web page is considered to be.

THE MISSING RELEVANCE CRITERION

I've always thought it odd that the relevance **ranking** used by the Web search engines missed some very obvious criteria to use in their relevance **ranking**. After all, when a searcher simply enters a term, such as microsoft or bowker or sprint, should not the most relevant Web pages be www.microsoft.com or www.bowker.com or www.sprint.com? Instead, many times these top-level corporate Web pages are buried deep in the results set.

Achieving this seems rather straightforward. Just add a rule that on single-word searches, a match on the term within the URL is **ranked** higher and a root URL **rank**s the highest. Just to try this, search the single term bowker on some of the main search engines and see which pages place it first in the list of relevant pages.

Lycos finds a page for Joe Bowker. Excite places an "Index-ward **database**" first, whatever that is. AltaVista tracks down Bowker '5 Books Out of Print page, but not the top-level page. Northern Light offers a page from a bulletin on the British Bowker-Saur site. HotBot takes its turn with a contact page from the U.S. Bowker site, but the searcher must choose the "See results from this site only" **link** to find the top-level Bowker page. Only Infoseek and Google! successfully find the main United States' Bowker Web page and deliver it as their number one search result.

THE SPAM DIMENSION

All the standard relevance techniques have fallen prey to an unexpected aspect of the very dynamic nature of the Web. Or perhaps more accurately, they have fallen prey to human nature. Since the Web search engines are so commonly used for finding information sites, Web builders are constantly trying to raise the profile of their site within the search engines.

Initially, the intent was to rely on author description and indexing, and the idea of metatags was born. The hope was that Web page builders would use metatags to insert keywords and descriptions that accurately represented the topic of their pages and their site. Then the search engines could give the words in author-supplied metatags a higher relevance weight.

Unfortunately, the economic underpinnings of the Web are all based on directing traffic to Web sites. Many less-than-scrupulous Web site builders quickly found that adding popular search words and phrases somewhere on their pages would attract more visitors.

Extraneous, irrelevant, and duplicative words would be added in the title, meta keywords, or the body. Adding the same word over and over again at the smallest size and in the same color as the background is a common trick.

The frequent attempts at spamming the indexes and their **ranking** cause the search engines to progressively change **ranking** algorithms and to develop sophisticated spam detection filters. In fact, any time that one of the major search engines thinks up a great new feature, they also need to consider whether or not it would be susceptible to index spamming.

The Web is very reactive. A search engine introduces an idea, e.g., AltaVista starts advertising its indexing of meta keywords. Then the spammers start to abuse the system. Another search engine, Excite, states that it will not index metatag keywords at all. Meanwhile, AltaVista and the other keyword indexers get busy trying to identify the spam techniques and create filters to get rid of those pages. Then the spammers find new ways to abuse the search engines. It becomes a never-ending cycle.

OTHER RELEVANCE FACTORS

With the huge variation in quality, document structure, information accuracy, and scope of the Web, it is a wonder that any relevance algorithm is sometimes successful. However, the new directions seen in the Clever Project at IBM's Almaden Research Center, the former Rankdex, and Google!, show an important factor that should be more widely adopted. Two factors weigh heavily in these **methods**: anchor text references and source authority.

The anchor text references use **links** from other pages. The anchor text refers to the words that have been hyper-linked to a new URL. In other words, a Web page that both mentions the publisher Bowker and offers a **link** to Bowker's Web site from the word "Bowker" has "Bowker" as the anchor text. When several or even many other Web sites all point to the same Web page from the same anchor text, the page to which they point is quite likely to be highly relevant to anyone searching on the term or terms within the anchor.

Unfortunately, using just the anchor **link** technique could rapidly fall prey to a new spamming technique. Web index spammers might just create loads of new pages that consist of unrelated anchors that point to their Web site. To avoid this, Google! adds a layer of weighting **links** from authoritative or well-known sites higher than anchors from unknown sites. Combining this source authority with the anchor text references can achieve highly relevant results.

PRACTICAL RELEVANCE AT WORK

While work on refining relevance algorithms for general searching is ongoing, the Internet search engines have been most successful at finding some rather simple, practical solutions to displaying highly relevant hits first. Rather than changing their relevance sorting, they have added new approaches on top of the general search results.

AltaVista's partnership with RealNames is a very basic example. On a search using AltaVista's simple search, terms that match records in the RealNames **database** are listed first-above and separate from the regular search results. Since RealNames records tie company names and trademarks to the appropriate business or organizational Web site, this practical approach achieves what most of the regular relevancy **ranking** algorithms lacked.

Another practical relevance approach is to provide both subject directory hits and results from the larger **database** of Web pages. In a sense, this is the approach Yahoo! has used so successfully. Since it is already a directory, a search on Yahoo! finds directory hits first, but then goes out for more results from the Web search engines. So the practical approach now provided by most search engines is to partner with a directory or to produce their own. Run a search on Excite, Infoseek, Snap, or Lycos and the first hits are from their directories.

Even on Alta Vista, there are **links** at the bottom of the page pointing to LookSmart categories.

Excite goes well beyond the directory addition approach. Search on Excite for microsoft and above both the Web page hits and the directory listings, Excite provides a **link** to Microsoft's Web site, their mail address, a recent stock quote, and **links** to recent news articles about the company. Then the directory **links** are offered followed by the actual Web search results (where the top hit is a Microsoft copyright statement page).

HotBot teamed up with Direct Hit to provide more practical relevance above their search results. For common searches, HotBot offers a **link** to the "Top 10 Most Visited Sites for..." These are results from Direct Hit, where the actual **links** selected by previous searchers that ran the same or a similar search are tallied, and then the most popular of these are displayed by HotBot.

Alta Vista has also been busy beyond their RealNames approach. Their partnership with Ask Jeeves provides single answer options to searches entered as questions, such as What is the best search engine? or What is the best search engine for kids? and Where can I find a basic explanation of the computer term search engine?

And then there are the ads. All the major search engines, except GoTo, clearly differentiate advertiser content from their search results. All, except GoTo, state that advertisers do not get higher relevance weighting than other non-advertiser pages. However, the advertisement placement certainly can make the ads fairly prominent and the choice of ads displayed can certainly be tied to the search terms used. In addition, sometimes the advertiser **links** actually include the search terms. Search bowker on Lycos, and one of the plain ads above the search results trumpets "Books about Bowker at barnesandnoble.com" while another invites you to "Search GTE Yellow Pages for Bowker."

Many times, especially when you have entered a complex search, these ad **links** that use the search terms make no sense. However, if the searcher is indeed actually looking for books about the topic, phone numbers, or CDs, these ads may well direct the searcher to a more appropriate information resource.

STANDARD RELEVANCE IMPROVEMENTS

While too many search engines still ignore the missing relevance criterion mentioned earlier, there have been some important improvements beyond the practical relevance approaches discussed in the previous section. Relevance **ranking** of the actual search results is still being adjusted and improved. Some of the companies are incorporating the anchor approach of Google!

Alta Vista moved towards an automatic phrase recognition system in its simple search. Rather than processing a series of search terms as being automatically ORed together, Alta Vista looks for millions of commonly-used phrases. If such a phrase is identified, the search results are for the phrase rather than either term. For example, searching information Literacy, with no quotes, +, or other special operators, finds about 9,000 hits, as opposed to the 23 million that an OR operation would find or even the more than 100,000 that an AND operation would retrieve.

In addition, Alta Vista suggests more specific searches. That same information Literacy search run on the basic Alta Vista search finds Alta Vista suggesting other more specific phrases to search, such as Information Literacy Standards, National Forum on Information Literacy, and information literacy skills. Note that the suggestions even include capital letters in some, to take advantage of Alta Vista's uppercase detection abilities. Also note that this feature, as well as the RealNames, Ask Jeeves, and automatic phrase recognition, is not available in the Alta Vista advanced search.

The success of search engines' determinations of relevance has been rising steadily, even if many would say that it still has a long way to go. Interestingly, some of the most successful changes in relevance display have come under what I have called "practical relevance approaches that deliver relevant hits separate from the regular results display. Relevance scores are no longer displayed on the results from most search engines, although newer ones like Google! still follow in the footsteps of their predecessors and give both a number and an iconic relevance score.

Given the very reactive and dynamic nature of the Web, and the capabilities of the Web search engines to adjust to their users needs, we can expect to see more modifications and developments. No information search and retrieval system is perfect, and the Web search engines often show some of the more obvious defects. However, even in the near term future, we can all hope to see the Web search engines delivering more relevant results more frequently and a continued rise in relevance.

This column is also available on the ONLINE Web site at [http://www.onlineinc.com / onlineimag](http://www.onlineinc.com/onlineimag).

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Additional Information:

Audience: Trade

Publication Format: Magazine/Journal

Geographic Code/Name: 1USA United States

Industry Category: BUSN Any type of business; LIB Library and Information Science

ISSN: 0146-5422

Product Code/Name: 4811500 (Specialized Telecommunication Services)

Record Date: 19990511

Record Number: 54474837

Subject Heading: Online services--Planning

Word Count: 2606

Document Rank: 22

Headline/Title: Rising Relevance in Search Engines.

Author(s): Notess, Greg R.

Date: 05/01/99

Source: Online

Volume/Issue/Pg: Vol: 23 Issue: 3

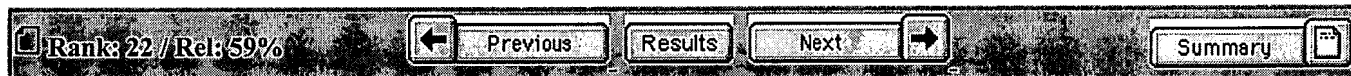
Database: IAC Consolidated Business Collection

Num. Pages: 9 (2900 words)

Accession Num: 54474837

MNIS Document: 313038

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	Welcome Joyce Baker	Manage Alerts & Requests	View Alerts	New Request								
Modify	Save	Alert	Sort: % Rank	1/1 12/31 Newest	12/31 1/1 Oldest	Source	Subject	Draw	Graph	Tech BarChart	Print..	Similar Docs
Rank: 3 / Rel: 70%		Previous	Results	Next	Summary							

Expert Network: effective and efficient learning from human decisions in text categorization and retrieval

Most Relevant Section
Document Citation

Yiming Yang • *SIGIR '94. Proceedings of the Seventeenth Annual International ACM-SIGIR Conference on Research and Development in Information Retrieval* Page: 13-22 • 01/01/94

Expert Network (ExpNet) is our approach to automatic categorization and retrieval of natural language texts. We use a training set of texts with expert assigned categories to construct a network which approximately reflects the conditional probabilities of categories given a text. The input **nodes** of the network are words in the training texts, the **nodes** on the intermediate level are the training texts, and the output **nodes** are categories. The **links** between **nodes** are computed based on statistics of the word distribution and the category distribution over the training set. ExpNet is used for relevance **ranking** of candidate categories of an arbitrary text in the case of text categorization, and for relevance **ranking** of documents via categories in the case of text retrieval. We have evaluated ExpNet in categorization and retrieval on a document collection of the MEDLINE **database**, and observed a performance in recall and precision comparable to the Linear Least Squares Fit (LLSF) mapping **method**, and significantly better than other **methods** tested. Computationally, ExpNet has an $O(N \log N)$ time complexity which is much more efficient than the cubic complexity of the LLSF **method**. The simplicity of the model, the high recall precision rates, and the efficient computation together make ExpNet preferable as a practical solution for real world applications.

Additional Information:

Descriptors: computational complexity ; expert systems ; information retrieval ; learning (artificial intelligence) ; natural languages ; word processing
 Identifiers: Expert Network ; learning from human decisions ; text categorization ; natural language texts ; expert assigned categories ; ExpNet ; conditional probabilities ; input **nodes** ; statistics ; word distribution ; category distribution ; relevance **ranking** ; candidate categories ; text retrieval ; document collection ; MEDLINE **database** ; precision ; Linear Least Squares Fit ; LLSF mapping **method**
 Document Type: Conference Paper or Conference Papers in Journal
 Number of References: 15
 Author Affiliation: Section of Med. Inf. Resources, Mayo Clinic, Rochester, MN, USA
 Editor(s): Croft, W.B. ; van Rijsbergen, C.J.
 Conference: Proceedings of 17th International Conference on Research and Development in Information Retrieval. SIGIR 94
 Conference Location: Dublin, Ireland
 Conference Dates: 3-6 July 1994
 Place of Publication: Berlin, Germany
 Country of Publication: Germany
 Publisher: Springer-Verlag
 Sponsoring Organization: Dublin City Univ. ; Aer Lingus ; Bord Failte ; Comm. Eur. Communities ; et al
 Length of Source: 358
 International Standard Book Number: 3 540 19889 X
 Copyright 1995, IEE

Document Rank: 3

Headline/Title: Expert Network: effective and efficient learning from human decisions in text categorization and retrieval

Author(s): Yiming Yang

Date: 01/01/94

Source: SIGIR '94. Proceedings of the Seventeenth Annual International ACM-SIGIR Conference on Research and Development in Information Retrieval Page: 13-22

Database: IEE/INSPEC

Num. Pages: 2 (270 words)

Accession Num: 4910912

MNIS Document: 343813

Copyright Notice: © 1994 SIGIR '94. Proceedings of the Seventeenth Annual International ACM-SIGIR Conference on Research and Development in Information Retrieval Page: 13-22

Rank: 3 / Rel: 70%

Previous Results Next Summary

Modify Save Alert Sort: % Rank 1/1 12/31 Newest Oldest 1/1 Source Subject Draw: Graph BarChart Print Similar Docs

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A fuzzy approach to accessing accident databases

Chung, P.W.H. ; Jefferson, M. • *Applied Intelligence: The International Journal of Artificial Intelligence, Neural Networks, and Complex Problem-Solving Technologies Vol: 9 Issue: 2 Page: 129-37*
• 09/01/98

Most Relevant Section
Document Citation

The paper is concerned with accessing information from accident **databases**. It discusses the limitation of current accident **databases** and focuses on the issue of finding and **ranking** of information that relates to a query. A user or system initiates an interaction with a **database** by specifying what is of interest in the form of a query. The query does not have to be treated as a precise description of what is of interest, but a vague or "fuzzy" one. Fuzzy **database** techniques make it possible to exploit all available information by returning not only items that match the query exactly, but also items that bear some relation to the query. A domain model for accident reports in the process industries was developed. It consists of four classification hierarchies for the attributes operation, equipment, cause and consequence. A common approach for assessing how closely two terms are related is based on the number of **links** between the two terms on a hierarchy. This approach is not appropriate for the accident **database** domain. Instead, the relationship between any two **nodes** on a hierarchy is classified into four different types. **Methods** for determining similarities for the different types of relationships are discussed and have been implemented in an accident **database**. The **ranking** of the retrieved information is much more satisfactory than the "distance" based approach.

Additional Information:

Descriptors: accidents ; **database** management systems ; fuzzy logic ; query processing
Identifiers: accident **databases** ; information **ranking** ; fuzzy **database** techniques ;
attributes operation ; cause ; consequence
Document Type: Journal Paper
Number of References: 27
Author Affiliation: Dept. of Chem. Eng., Loughborough Univ. of Technol., UK
Country of Publication: Netherlands
Publisher: Kluwer Academic Publishers
International Standard Serial Number: 0924-669X
Copyright 1998, IEE

Document Rank: 1

Headline/Title: A fuzzy approach to accessing accident databases

Author(s): Chung, P.W.H. ; Jefferson, M.

Date: 09/01/98

Source: Applied Intelligence: The International Journal of Artificial Intelligence, Neural Networks, and Complex Problem-Solving Technologies

Volume/Issue/Pg: Vol: 9 Issue: 2 Page: 129-37

Database: IEE/INSPEC

Num. Pages: 2 (270 words)

Accession Num: 6066647

MNIS Document: 212868

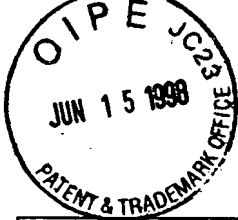
Copyright Notice: © 1998 Applied Intelligence: The International Journal of Artificial Intelligence, Neural Networks, and Complex Problem-Solving Technologies

Rank: 1 / Rel: 79% Results Next Summary

Modify Save Alert Sort % Rank 1/1 12/31 Newest 12/31 1/1 Oldest Source Subject Draw Graph Tech Print Similar Docs

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Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NUMBER	FILING/RECEIPT DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO./TITLE
09/004,827	01/09/98	PAGE	L 896-213

THOMAS J MCFARLANE
LUMEN INTELLECTUAL PROPERTY SERVICES
426 LOWELL AVENUE
PALO ALTO CA 94301

0212/0526

Lumen 6-198

NOT ASSIGNED

2772

DATE MAILED:

05/26/98

NOTICE OF INCOMPLETE RESPONSE
Filing Date Granted

Applicant's response of 5-8-98 has been entered into the record. However, the application still remains incomplete for the following reason(s).

- 1. The filing fee has not been received. The amount of \$ 135.00 is due.
- 2. The surcharge of \$ _____ has not been received.
- 3. The ~~declaration~~ Small Entity Statement has not been received.
- 4. The oath or declaration is not executed in compliance with 37 CFR 1.64(a) because:
 - a. The inventor's signature is missing.
 - b. The signature is missing for inventor(s) _____
 - c. The application is one filed under 37 CFR 1.42, 1.43, or 1.47, and the oath or declaration is not executed by the person(s) qualified to make the oath or declaration.

To prevent **ABANDONMENT** of this application, a complete response is required.

The period for response remains as set forth in the Notice to File Missing Parts dated 4-15-98. However, you may obtain **EXTENSIONS OF TIME** under the provisions of 37 CFR 1.136(a) by filing a petition accompanied by the appropriate fee (37 CFR 1.17).

Direct the response and any questions about this notice to "Attention: Box Missing Parts."

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98 JUL 28 AM 8:52
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Initial Patent Examination Division (703) 308-1202



VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS (37 CFR 1.9(f) and 1.27(d)) - NONPROFIT ORGANIZATION

Application No.: 09/004,827
Filing Date: 9 Jan 98
Applicant(s): **LAWRENCE PAGE**
Title: **METHOD FOR NODE RANKING IN A LINKED DATABASE**

I hereby declare that I am an official empowered to act on behalf of the entity identified below:

Name of Concern: **The Board of Trustees of the Leland Stanford Junior University**
Address of Concern: **900 Welch Road, Suite 350
Palo Alto, CA 94304**

I hereby declare that the entity identified above qualifies as a nonprofit organization as defined in 37 CFR 1.9(e), for purposes of paying reduced fees to the United States Patent and Trademark Office under section 41(a) and (b) of Title 35, United States Code, in that the entity is an institution of higher education.

I hereby declare that rights under contract or law have been conveyed to and remain with the entity identified above with regard to the invention identified above.

If the rights held by the entity identified above are not exclusive, each individual, concern or organization having rights to the invention is listed below* and no rights to the invention are held by any person, other than the inventor, who would not qualify as an independent inventor under 37 CFR 1.9(c) if that person made the invention, or by any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

* NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)

Name:		<input type="checkbox"/> Individual
Address:		<input type="checkbox"/> Small Business Concern
		<input type="checkbox"/> Nonprofit Organization

I acknowledge the duty to file, in conjunction with any Patent Application filed based on this Provisional Application, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate (37 CFR 1.28(b)).

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the Provisional Application, any patent applied for based on this Provisional Application, or any patent to which this verified statement is directed.

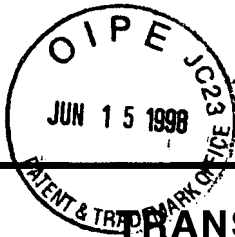
ASSIGNEE: THE BOARD OF TRUSTEES OF THE LELAND STANFORD JUNIOR UNIVERSITY

Stanford University
Office of Technology Licensing
900 Welch Road, Suite 350
Palo Alto, CA 94304

Official Authorized to Act on Behalf of Assignee:

Signature: *Katharine Ku*
Name: **KATHARINE KU**
Title: **DIRECTOR
TECHNOLOGY LICENSING**

April 25, 1998
Date



0210
2700

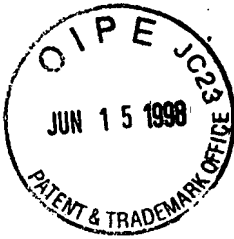
TRANSMITTAL FORM (for all correspondence after initial filing)	Attorney Docket No. S96-213	Total Pages
	Application Number 09/004,827	
	Filing Date 1/9/98	
	First Named Inventor LAWRENCE PAGE	
	Group Art Unit 2772	
	Examiner NOT YET ASSIGNED	

ENCLOSURES (check all that apply)	
<input checked="" type="checkbox"/> Return Receipt Postcard (MPEP 503)	<input checked="" type="checkbox"/> Response to Notice of Incomplete Response
<input type="checkbox"/> Fee Transmittal Form	<input type="checkbox"/> Small Entity Statement
<input type="checkbox"/> Fee Attached	<input type="checkbox"/> Declaration by Inventors
<input type="checkbox"/> Response/Amendment	<input type="checkbox"/> Assignment papers
<input type="checkbox"/> After Final Rejection	<input type="checkbox"/> Power of Attorney by Assignee
<input type="checkbox"/> After Allowance communication to Group	<input type="checkbox"/> IDS/PTO-1449
<input type="checkbox"/> with Corrected Drawing(s) Total Sheets: <input type="checkbox"/>	<input type="checkbox"/> with copies of cited references
<input type="checkbox"/> with Affidavits/Declarations	<input type="checkbox"/> New Power of Attorney and Revocation of Old
<input type="checkbox"/> Extension of Time Request	<input type="checkbox"/> Change of Correspondence Address
<input type="checkbox"/> Express Abandonment Request	<input checked="" type="checkbox"/> Other: Verified Statement of Submission of Small Entity Statement

SIGNATURE OF AGENT	
NAME	THOMAS J. MCFARLANE, REG. NO. 39,299
Signature	<i>Thomas J. McFarlane</i>
Date	6/12/98

Certificate of Mailing by "Regular Mail"	
I hereby certify that this correspondence is being deposited on the date indicated below as first class mail with the U.S. Postal Service addressed to the ASSISTANT COMMISSIONER FOR PATENTS, WASHINGTON, DC 20231.	
<i>Thomas J. McFarlane</i>	DATE OF MAILING: 6/12/98
THOMAS J. MCFARLANE REG. NO. 39,299	

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application Number: 09/004,827
Filing Date: 9 Jan 98
Applicants: Lawrence Page
Application Title: Method for Node Ranking in a Limked Database
Art Unit: 2772

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, DC 20231, on 6/12/98 date of deposit

Thomas J. McFarlane
Thomas J. McFarlane, Reg. No. 39,299

6/12/98
date

VERIFIED STATEMENT

Commissioner of Patents and Trademarks
Washington, DC 20231

Dear Sir:

On June 2, 1998, we received a Notice of Incomplete Response, stating the Missing Parts Response was incomplete due to lack of fees and no Small Entity Statement Declaration. On May 4, 1998, we filed the Missing Parts in full as shown by the dated return post card. Therefore, kindly withdrawal the Notice of Incomplete Response as the documents attached prove otherwise. Enclosed is a copy of the Small Entity Statement, Return Postcard and Transmittal sent with the original response.

Very respectfully,

Thomas J. McFarlane
Thomas J. McFarlane
Reg. No. 39,299

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TRANSMITTAL FORM (for all correspondence after initial filing)	Attorney Docket No. S96-213	Total Pages
	Application Number 09/004,827	
	Filing Date 1/9/98	
	First Named Inventor LAWRENCE PAGE	
	Group Art Unit 2772	
	Examiner NOT YET ASSIGNED	

ENCLOSURES (check all that apply)	
<input checked="" type="checkbox"/> Return Receipt Postcard (MPEP 503)	<input checked="" type="checkbox"/> Response to Notice of Missing Parts
<input checked="" type="checkbox"/> Fee Transmittal Form	<input checked="" type="checkbox"/> Small Entity Statement
<input checked="" type="checkbox"/> Fee Attached	<input checked="" type="checkbox"/> Declaration by Inventors
<input type="checkbox"/> Response/Amendment	<input checked="" type="checkbox"/> Assignment papers
<input type="checkbox"/> After Final Rejection	<input checked="" type="checkbox"/> Power of Attorney by Assignee
<input type="checkbox"/> After Allowance communication to Group	<input type="checkbox"/> IDS/PTO-1449
<input type="checkbox"/> with Corrected Drawing(s) Total Sheets: <input type="checkbox"/>	<input type="checkbox"/> with copies of cited references
<input type="checkbox"/> with Affidavits/Declarations	<input type="checkbox"/> New Power of Attorney and Revocation of Old
<input type="checkbox"/> Extension of Time Request	<input type="checkbox"/> Change of Correspondence Address
<input type="checkbox"/> Express Abandonment Request	<input type="checkbox"/> Other:

SIGNATURE OF AGENT	
NAME	THOMAS J. MCFARLANE, REG. NO. 39,299
Signature	
Date	5/4/98

Certificate of Mailing by "Regular Mail"	
I hereby certify that this correspondence is being deposited on the date indicated below as first class mail with the U.S. Postal Service addressed to the ASSISTANT COMMISSIONER FOR PATENTS, WASHINGTON, DC 20231.	
	DATE OF MAILING: 5/4/98
THOMAS J. MCFARLANE REG. NO. 39,299	



SA6-213

Received today:

App 09/004, 827 filed 9 Jan 98 by L. Past entitled
"Method for Node Ranking in a Linked
Database" Declaration, Assignment, \$40 Rec fee,
\$ED, Pgt, \$65 Surcharge fee.



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UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
 Address: COMMISSIONER OF PATENTS AND TRADEMARKS
 Washington, D.C. 20231

APPLICATION NUMBER	FILING/RECEIPT DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO./TITLE
09/004,827	01/09/98	PAGE	L 596-213

0212/0526

#3

THOMAS J MCFARLANE
 LUMEN INTELLECTUAL PROPERTY SERVICES
 426 LOWELL AVENUE
 PALO ALTO CA 94301

NOT ASSIGNED

2772

DATE MAILED:

05/26/98

NOTICE OF INCOMPLETE RESPONSE
Filing Date Granted

Applicant's response of 5-2-98 has been entered into the record. However, the application still remains incomplete for the following reason(s).

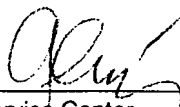
- 1. The filing fee has not been received. The amount of \$ 135.00 is due.
- 2. The surcharge of \$ _____ has not been received.
- 3. The ~~declaration~~ Small Entity Statement has not been received.
- 4. The oath or declaration is not executed in compliance with 37 CFR 1.64(a) because:
 - a. The inventor's signature is missing.
 - b. The signature is missing for inventor(s) _____
 - c. The application is one filed under 37 CFR 1.42, 1.43, or 1.47, and the oath or declaration is not executed by the person(s) qualified to make the oath or declaration.

To prevent **ABANDONMENT** of this application, a complete response is required.

The period for response remains as set forth in the Notice to File Missing Parts dated 4-15-98. However, you may obtain EXTENSIONS OF TIME under the provisions of 37 CFR 1.136(a) by filing a petition accompanied by the appropriate fee (37 CFR 1.17).

Direct the response and any questions about this notice to "Attention: Box Missing Parts."

A copy of this notice MUST be returned with the response.


 Customer Service Center
 Initial Patent Examination Division (703) 308-1202



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 Patent and Trademark Office
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 Washington, D.C. 20231

Sector
#4

APPLICATION NUMBER	FILING/RECEIPT DATE	PAGE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO./TITLE
--------------------	---------------------	------	-----------------------	---------------------------

0362/0415
 THOMAS J MCFARLANE
 LUMEN INTELLECTUAL PROPERTY SERVICES
 426 LOWELL AVENUE
 PALO ALTO CA 94301

NOT ASSIGNED

2772

04/15/98

Lumen 4-20-98 DATE MAILED:

NOTICE TO FILE MISSING PARTS OF APPLICATION
No Filing Date
 (Enclosure to Form PTO-1123)

The required items noted below SHOULD be filed along with any items required on the "Notice of Incomplete Application." The filing date of this application will be the date of receipt of the items required on the "Notice of Incomplete Application." The items noted below must be filed no later than TWO MONTHS FROM THE FILING DATE ACCORDED THIS APPLICATION. If any of items 1 and 3 through 5 below are submitted after the filing date accorded this application, the SURCHARGE set forth in 37 CFR 1.16(e) of \$65.00 for a small entity in compliance with 37 CFR 1.27, or \$130.00 for a non-small entity, must also be timely submitted in reply to this NOTICE to avoid abandonment.

If all required items on this form and on the "Notice of Incomplete Application" are filed together, the total amount owed by applicant as a small entity (statement filed) non-small entity is \$ 795.00.

1. The statutory basic filing fee is:
 missing or unexecuted.
 insufficient.
 Applicant must submit \$ 395.00 to complete the basic filing fee and/or file a small entity statement claiming such status. (37 CFR 1.27).

2. Additional claim fees of
 \$ _____ for _____ independent claims over 3.
 \$ _____ for _____ dependent claims over 20.
 \$ 290.00 for multiple dependent claim surcharge.

Applicant must either submit the additional claim fees or cancel additional claims for which fees are due.

3. The oath or declaration:
 is missing or unexecuted.
 does not cover the items required on "Notice of Incomplete Application."
 does not identify the application to which it applies.
 does not include the post office address and the city and state or foreign country of applicant's residence.
 An oath or declaration in compliance with 37 CFR 1.63, including residence information and identifying the application by the above Application Number and filing date is required.

4. The signature(s) to the oath or declaration is/are by a person other than the inventor or person qualified under 37 CFR 1.42, 1.43 or 1.47.
 A properly signed oath or declaration in compliance with 37 CFR 1.63, referring to the above Application Number and filing date, is required.

5. The signature of the following joint inventor(s) is missing from the oath or declaration:

An oath or declaration in compliance with 37 CFR 1.63 listing the names of all inventors and signed by the omitted inventor(s), identifying this application by the above Application Number and filing date, is required.

6. A \$50.00 processing fee is required since your check was returned without payment (37 CFR 1.21(m)).

7. The application does not comply with the Sequence Rules.
 See attached "Notice To Comply with Sequence Rules: 37 CFR 1.821 -1.825."

8. OTHER:

Direct the reply and any questions about this notice to "Attention: Box Missing Parts."
 03712/1998 BHINES 00000007 09004827

01 FC:205

A copy of this notice MUST be returned with the reply.

[Handwritten signature]



GAU 2772

Attorney Docket No: S96-213

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS (37 CFR 1.9(f) and 1.27(d)) - NONPROFIT ORGANIZATION

Application No.: 09/004,827
Filing Date: 9 Jan 98
Applicant(s): **LAWRENCE PAGE**
Title: **METHOD FOR NODE RANKING IN A LINKED DATABASE**

I hereby declare that I am an official empowered to act on behalf of the entity identified below:

Name of Concern: **The Board of Trustees of the Leland Stanford Junior University**
Address of Concern: **900 Welch Road, Suite 350
Palo Alto, CA 94304**

I hereby declare that the entity identified above qualifies as a nonprofit organization as defined in 37 CFR 1.9(e), for purposes of paying reduced fees to the United States Patent and Trademark Office under section 41(a) and (b) of Title 35, United States Code, in that the entity is an institution of higher education.

I hereby declare that rights under contract or law have been conveyed to and remain with the entity identified above with regard to the invention identified above.

If the rights held by the entity identified above are not exclusive, each individual, concern or organization having rights to the invention is listed below* and no rights to the invention are held by any person, other than the inventor, who would not qualify as an independent inventor under 37 CFR 1.9(c) if that person made the invention, or by any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

* NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)

Name:		<input type="checkbox"/> Individual
Address:		<input type="checkbox"/> Small Business Concern
		<input type="checkbox"/> Nonprofit Organization

I acknowledge the duty to file, in conjunction with any Patent Application filed based on this Provisional Application, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate (37 CFR 1.28(b)).

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the Provisional Application, any patent applied for based on this Provisional Application, or any patent to which this verified statement is directed.

ASSIGNEE: THE BOARD OF TRUSTEES OF THE LELAND STANFORD JUNIOR UNIVERSITY

Stanford University
Office of Technology Licensing
900 Welch Road, Suite 350
Palo Alto, CA 94304

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98 JUN -7 AM 9:18
GROUP 2700

Official Authorized to Act on Behalf of Assignee:

Signature: *Katharine Ku*
Name: **KATHARINE KU**
Title: **DIRECTOR
TECHNOLOGY LICENSING**

April 25, 1998
Date



Declaration for Patent Application and Power of Attorney

As a below named inventor, I hereby declare that my residence, post office address, and citizenship are as stated below next to my name, and that I believe I am the original, first and sole inventor (if only one is listed) or an original, first and joint inventor (if plural names are listed) of the subject matter which is claimed and for which a patent is sought on the invention described in application no. 09/004,827 filed 9 Jan. 1998 entitled METHOD FOR NODE RANKING IN A LINKED DATABASE.

Inventor:	Full name:	LAWRENCE PAGE	Citizenship:	USA
	Residence:	6-H Hulme, Escondido Village, Stanford, CA 94305		
	Postal Address:	same as above PO Box 16361, Stanford CA 94309		

I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above. I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a). I claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed.

PRIOR FOREIGN APPLICATION(S)

Country	Application Number	Date of Filing	Priority Claimed Under 35 U.S.C. §119
NONE			<input type="checkbox"/> Yes <input type="checkbox"/> No

I claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

PRIOR U. S. APPLICATION(S)

Application No.	Filing Date	Status
60/035,205	1/10/97	<input checked="" type="checkbox"/> Provisional <input type="checkbox"/> Patented <input type="checkbox"/> Pending <input type="checkbox"/> Regular

I hereby appoint Thomas J. McFarlane, Reg. No. 39,299, Marek Alboszta, Reg. No. 39,894, Mark B. Floyd, Reg. No. 41,022, and Andrei Popovici Reg. No. 42,401 as my agents with full power of substitution to prosecute this application and transact all business in the United States Patent and Trademark Office connected therewith. Direct all correspondence to:

Thomas J. McFarlane
 426 Lowell Avenue
 Palo Alto, CA 94301-3813
 Telephone: 650-321-6630
 Fax: 650-321-1621.

The attorney docket number for this case is: **S96-213**.

I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both under Title 18, §1001 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

INVENTOR SIGNATURE(S)

Lawrence Page

 LAWRENCE PAGE

1/24/98

 Date

*Lynar Residences
 Stanford, CA 94305
 Residence address:
 121 Campus Drive
 Stanford, CA 94305*



POWER OF ATTORNEY BY ASSIGNEE

The undersigned assignee of the entire interest in application no.: 09/004,827 for Letters Patent filed 9 Jan 98 for the invention entitled:

METHOD FOR NODE RANKING IN A LINKED DATABASE

by virtue of Assignment recorded concurrently herewith hereby appoints Thomas J. McFarlane, Reg. No. 39,299, Marek Alboszta, Reg. No. 39,894, Mark B. Floyd, Reg. No. 41,022, and Andrei Popovici, Reg. No. P-42,401 as its agents to prosecute the attached application and to transact all business in the Patent and Trademark Office connected therewith, said appointment to be to the exclusion of the inventor(s) and their attorney(s) in accordance with the provisions of Rule 32 of the Patent Office Rules of Practice.

Please direct all communication relative to said application to the following correspondence address:

Thomas J. McFarlane
Lumen
426 Lowell Avenue
Palo Alto, California 94301
Telephone: 650-321-6630
Facsimile: 650-321-1621

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98 JUL -7 AM 9:18
GROUP 2700

I am duly authorized to sign this instrument on behalf of assignee corporation. I hereby declare that, to the best of my knowledge and belief, title is in the assignee herein, and I affirm review of the Assignment document concurrently submitted and believe that the attached application has been assigned to assignee herein and that assignee therefore has the right to make this Power of Attorney and Exclusion of Inventor(s).

I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

ASSIGNEE: THE BOARD OF TRUSTEES OF THE LELAND STANFORD JUNIOR UNIVERSITY

Stanford University
Office of Technology Licensing
900 Welch Road, Suite 350
Palo Alto, CA 94304

Official Authorized to Act on Behalf of Assignee:

Signature: Katharine Ku
Name: KATHARINE KU
Title: DIRECTOR
TECHNOLOGY LICENSING

April 25, 1998
Date



TRANSMITTAL FORM (for all correspondence after initial filing)	Attorney Docket No. S96-213	Total Pages
	Application Number 09/004,827	
	Filing Date 1/9/98	
	First Named Inventor LAWRENCE PAGE	
	Group Art Unit 2772	
	Examiner NOT YET ASSIGNED	

ENCLOSURES (check all that apply)	
<input checked="" type="checkbox"/> Return Receipt Postcard (MPEP 503)	<input checked="" type="checkbox"/> Response to Notice of Missing Parts
<input checked="" type="checkbox"/> Fee Transmittal Form	<input checked="" type="checkbox"/> Small Entity Statement
<input checked="" type="checkbox"/> Fee Attached	<input checked="" type="checkbox"/> Declaration by Inventors
<input type="checkbox"/> Response/Amendment	<input checked="" type="checkbox"/> Assignment papers
<input type="checkbox"/> After Final Rejection	<input checked="" type="checkbox"/> Power of Attorney by Assignee
<input type="checkbox"/> After Allowance communication to Group	<input type="checkbox"/> IDS/PTO-1449
<input type="checkbox"/> with Corrected Drawing(s) Total Sheets: <input type="checkbox"/>	<input type="checkbox"/> with copies of cited references
<input type="checkbox"/> with Affidavits/Declarations	<input type="checkbox"/> New Power of Attorney and Revocation of Old
<input type="checkbox"/> Extension of Time Request	<input type="checkbox"/> Change of Correspondence Address
<input type="checkbox"/> Express Abandonment Request	<input type="checkbox"/> Other:

SIGNATURE OF AGENT	
NAME	THOMAS J. MCFARLANE, REG. NO. 39,299
Signature	<i>Thomas J. McFarlane</i>
Date	5/4/98

Certificate of Mailing by "Regular Mail"	
I hereby certify that this correspondence is being deposited on the date indicated below as first class mail with the U.S. Postal Service addressed to the ASSISTANT COMMISSIONER FOR PATENTS, WASHINGTON, DC 20231.	
<i>Thomas J. McFarlane</i>	DATE OF MAILING: 5/4/98
THOMAS J. MCFARLANE	
REG. NO. 39,299	



FEE TRANSMITTAL

Application Number:	09/004,827
Filing Date:	1/9/98
First Named Inventor:	Lawrence Page
Title of Invention:	Method for Node Ranking in a Linked Database
Group Art Unit:	2772
Examiner:	not yet assigned
Attorney Docket No.:	S96-213

Fee Calculation:

for Large Entity / Small Entity.

Basic Filing Fee:

Utility Patent Application: \$790 / \$395 \$
 Provisional Patent Application: \$150 / \$75 \$

Claims:

Number of Total Claims Over 20: x \$22 / \$11 = \$
 No. of Independent Claims Over 3: x \$82 / \$41 = \$

Other Fees:

Extension of time, 1 month \$110 / \$55 \$
 Extension of time, 2 months \$400 / \$200 \$
 Extension of time, 3 months \$950 / \$475 \$
 Extension of time, 4 months \$1510 / \$755 \$
 Missing Parts Surcharge (Regular Application) \$130 / \$65 \$ 65
 Missing Parts Surcharge (Provisional Application) \$50 / \$25 \$
 Recordation of Assignment Document \$40 \$ 40
 Issue Fee \$1320 / \$660 \$
 Printed Patent; Number of Copies: x \$3 = \$

TOTAL PAYMENT: \$ 105

Method of Payment:

Payment Enclosed
 Check

Signature of Applicant, Attorney, or Agent

Thomas J. McFarlane
Thomas J. McFarlane, Reg. No. 39,299

5/4/98
Date



UNITED STATES DEPARTMENT OF COMMERCE
 Patent and Trademark Office
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 Washington, D.C. 20231

APPLICATION NUMBER 0362/0415	FILING/RECEIPT DATE 04/15/98	PAGE PAGE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO./TITLE #2
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THOMAS J MCFARLANE
 LUMEN INTELLECTUAL PROPERTY SERVICES
 426 LOWELL AVENUE
 PALO ALTO CA 94301

NOT ASSIGNED

2772

04/15/98

DATE MAILED:

NOTICE TO FILE MISSING PARTS OF APPLICATION
No Filing Date
(Enclosure to Form PTO-1123)

The required items noted below SHOULD be filed along with any items required on the "Notice of Incomplete Application." The filing date of this application will be the date of receipt of the items required on the "Notice of Incomplete Application." The items noted below must be filed no later than TWO MONTHS FROM THE FILING DATE ACCORDED THIS APPLICATION. If any of items 1 and 3 through 5 below are submitted after the filing date accorded this application, the SURCHARGE set forth in 37 CFR 1.16(e) of \$65.00 for a small entity in compliance with 37 CFR 1.27, or \$130.00 for a non-small entity, must also be timely submitted in reply to this NOTICE to avoid abandonment.

If all required items on this form and on the "Notice of Incomplete Application" are filed together, the total amount owed by applicant as a small entity (statement filed) non-small entity is \$ 795.00.

1. The statutory basic filing fee is:
 missing or unexecuted.
 insufficient.
 Applicant must submit \$ 395.00 to complete the basic filing fee and/or file a small entity statement claiming such status (37 CFR 1.27).

2. Additional claim fees of
 \$ _____ for _____ independent claims over 3.
 \$ _____ for _____ dependent claims over 20.
 \$ 270.00 for multiple dependent claim surcharge.

Applicant must either submit the additional claim fees or cancel additional claims for which fees are due.

3. The oath or declaration:
 is missing or unexecuted.
 does not cover the items required on "Notice of Incomplete Application."
 does not identify the application to which it applies.
 does not include the post office address and the city and state or foreign country of applicant's residence.
 An oath or declaration in compliance with 37 CFR 1.63, including residence information and identifying the application by the above Application Number and filing date is required.

4. The signature(s) to the oath or declaration is/are by a person other than the inventor or person qualified under 37 CFR 1.42, 1.43 or 1.47.
 A properly signed oath or declaration in compliance with 37 CFR 1.63, referring to the above Application Number and filing date, is required.

5. The signature of the following joint inventor(s) is missing from the oath or declaration:

An oath or declaration in compliance with 37 CFR 1.63 listing the names of all inventors and signed by the omitted inventor(s), identifying this application by the above Application Number and filing date, is required.

6. A \$50.00 processing fee is required since your check was returned without payment (37 CFR 1.21(m)).

7. The application does not comply with the Sequence Rules.
 See attached "Notice To Comply with Sequence Rules 37 CFR 1.821 -1.825."

8. OTHER:

Direct the reply and any questions about this notice to "Attention: Box Missing Parts."

A copy of this notice MUST be returned with the reply.

[Handwritten signature]

A

01/09/98
1c541 U.S. PTO

UTILITY PATENT APPLICATION TRANSMITTAL	Attorney Docket No. S96-213	Total Pages
	First Named Inventor LAWRENCE PAGE	
	Title METHOD FOR NODE RANKING IN A LINKED DATABASE	

APPLICATION ELEMENTS	ACCOMPANYING APPLICATION PARTS
1. <input checked="" type="checkbox"/> Fee Transmittal Form (two copies)	8. <input type="checkbox"/> Assignment cover sheet and document(s)
2. <input checked="" type="checkbox"/> Specification Total Pages: <input type="text" value="19"/>	9. <input type="checkbox"/> Power of Attorney by Assignee <input type="checkbox"/> with CFR 3.73(b) statement
3. <input checked="" type="checkbox"/> Drawing(s) Total Sheets: <input type="text" value="1"/>	10. <input type="checkbox"/> English Translation Document
4. <input type="checkbox"/> Oath or Declaration Total Pages: <input type="text"/>	11. <input type="checkbox"/> IDS/PTO-1449 <input type="checkbox"/> with copies of cited references
a. <input type="checkbox"/> Newly executed (original or copy)	12. <input type="checkbox"/> Preliminary Amendment
b. <input type="checkbox"/> Copy from a prior application (CFR 1.63(d)) (complete Box 17 and note Box 5 below)	13. <input checked="" type="checkbox"/> Return Receipt Postcard (MPEP 503)
i. <input type="checkbox"/> Signed statement deleting inventors named in the prior application, see CFR 1.63(d)(2) and 1.33(b)	14. <input type="checkbox"/> Small Entity Statement <input type="checkbox"/> Statement filed in prior application Status still proper and desired
5. <input type="checkbox"/> Incorporation by Reference (if 4b is checked) The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated therein by reference.	15. <input type="checkbox"/> Certified Copy of Priority Document(s) (if foreign priority is claimed)
6. <input type="checkbox"/> Microfiche Computer Program (<i>Appendix</i>)	16. <input type="checkbox"/> Other:
7. <input type="checkbox"/> Nucleotide/Amino Acid Sequence Submission (all the following are necessary)	
a. <input type="checkbox"/> Computer Readable Copy	
b. <input type="checkbox"/> Paper Copy (identical to computer copy)	
c. <input type="checkbox"/> Statement verifying identity of above copies	
17. If a CONTINUING APPLICATION, check appropriate box and supply the requisite information: <input type="checkbox"/> continuation <input type="checkbox"/> divisional <input type="checkbox"/> CIP ...of prior application No.: <input type="text"/>	

18. CORRESPONDENCE ADDRESS					
NAME	THOMAS J. MCFARLANE LUMEN INTELLECTUAL PROPERTY SERVICES				
ADDRESS	426 LOWELL AVENUE				
CITY	PALO ALTO	STATE	CA	ZIP CODE	94301
COUNTRY	USA	TELEPHONE	(650) 321-6630	FAX	(650) 321-1621

Certificate of Mailing by "Express Mail"	
I hereby certify that I am mailing this correspondence on the date indicated below to the ASSISTANT COMMISSIONER FOR PATENTS, BOX PATENT APPLICATION, WASHINGTON, DC 20231 using the "Express Mail Post Office to Addressee" service of the United States Postal Service under 37 CFR 1.10.	
<i>Thomas J. McFarlane</i> THOMAS J. MCFARLANE REG. NO. 39,299	DATE OF MAILING: JANUARY 9, 1998 EXPRESS MAIL LABEL NO: EI753589662US

09004227 010998

Patent Application of
Lawrence Page
for
Method for Node Ranking in a Linked Database

5

CROSS-REFERENCES TO RELATED APPLICATIONS

10

This application claims priority from U.S. provisional patent application number 60/035,205 filed 01/10/97, which is incorporated herein by reference.

STATEMENT REGARDING GOVERNMENT SUPPORT

15

This invention was supported in part by the National Science Foundation grant number IRI-9411306-4. The Government has certain rights in the invention.

FIELD OF THE INVENTION

20

This invention relates generally to techniques for analyzing linked databases. More particularly, it relates to methods for assigning ranks to nodes in a linked database, such as any database of documents containing citations, the world wide web or any other hypermedia database.

25

BACKGROUND OF THE INVENTION

30

Due to the developments in computer technology and its increase in popularity, large numbers of people have recently started to frequently search huge databases. For example, internet search engines are frequently used to search the entire world wide web. Currently, a popular search engine might execute over 30 million searches per day of the indexable part of the web, which has a size in excess of 500 Gigabytes. Information retrieval systems are traditionally judged by their precision and recall. What is

often neglected, however, is the quality of the results produced by these search engines. Large databases of documents such as the web contain many low quality documents. As a result, searches typically return hundreds of irrelevant or unwanted documents which camouflage the few relevant ones. In order to improve the selectivity of the results, common techniques allow the user to constrain the scope of the search to a specified subset of the database, or to provide additional search terms. These techniques are most effective in cases where the database is homogeneous and already classified into subsets, or in cases where the user is searching for well known and specific information. In other cases, however, these techniques are often not effective because each constraint introduced by the user increases the chances that the desired information will be inadvertently eliminated from the search results.

Search engines presently use various techniques that attempt to present more relevant documents. Typically, documents are ranked according to variations of a standard vector space model. These variations could include (a) how recently the document was updated, and/or (b) how close the search terms are to the beginning of the document. Although this strategy provides search results that are better than with no ranking at all, the results still have relatively low quality. Moreover, when searching the highly competitive web, this measure of relevancy is vulnerable to "spamming" techniques that authors can use to artificially inflate their document's relevance in order to draw attention to it or its advertisements. For this reason search results often contain commercial appeals that should not be considered a match to the query. Although search engines are designed to avoid such ruses, poorly conceived mechanisms can result in disappointing failures to retrieve desired information.

Hyperlink Search Engine, developed by IDD Information Services, (<http://rankdex.gari.com/>) uses backlink information (i.e., information from pages that contain links to the current page) to assist in identifying relevant web documents. Rather than
5 using the content of a document to determine relevance, the technique uses the anchor text of links to the document to characterize the relevance of a document. The idea of associating anchor text with the page the text points to was first implemented in the World Wide Web Worm (Oliver A. McBryan, GENVL and WWW: Tools for Taming the Web, First International
10 Conference on the World Wide Web, CERN, Geneva, May 25-27, 1994). The Hyperlink Search Engine has applied this idea to assist in determining document relevance in a search. In particular, search query terms are compared to a collection of
15 anchor text descriptions that point to the page, rather than to a keyword index of the page content. A rank is then assigned to a document based on the degree to which the search terms match the anchor descriptions in its backlink documents.

20 The well known idea of citation counting is a simple method for determining the importance of a document by counting its number of citations, or backlinks. The citation rank $r(A)$ of a document which has n backlink pages is simply

25
$$r(A) = n.$$

In the case of databases whose content is of relatively uniform quality and importance it is valid to assume that a highly cited document should be of greater interest than a document with only
30 one or two citations. Many databases, however, have extreme variations in the quality and importance of documents. In these cases, citation ranking is overly simplistic. For example, citation ranking will give the same rank to a document that is

cited once on an obscure page as to a similar document that is cited once on a well-known and highly respected page.

OBJECTS AND ADVANTAGES OF THE INVENTION

5 Accordingly, it is a primary object of the present invention to provide a method for ranking documents in a linked database. It is another object of the invention to provide such a method that provides an objective ranking based on the relationship between documents. Another object of the invention is to provide a

10 technique for ranking documents within a database whose content has a large variation in quality and importance. Another object of the present invention is to provide a document ranking method that is scalable and can be applied to extremely large databases such as the world wide web. Additional objects and advantages

15 will become apparent in view of the following description and associated figures.

SUMMARY OF THE INVENTION

20 The present invention achieves the above objects by taking advantage of the linked structure of a database to assign a rank to each document in the database, where the document rank is a measure of the importance of a document. Rather than determining relevance from the intrinsic content of a document, or from the anchor text of backlinks to the document, the

25 present method determines importance from the extrinsic relationships between documents. Intuitively, a document should be important (regardless of its content) if it is highly cited by other documents. Not all citations, however, are of equal significance. A citation from an important document is more

30 important than a citation from a relatively unimportant document. Thus, the importance of a page, and hence the rank assigned to it, should depend not just on the number of citations it has, but on the importance of the citing documents as well. This implies a recursive definition of rank: the rank

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of a document is a function of the ranks of the documents which cite it. The ranks of documents may be calculated by an iterative procedure on a linked database.

5 Because citations, or links, are ways of directing attention, the important documents correspond to those documents to which the most attention is directed. Thus, a high rank indicates that a document is considered valuable by many people or by important people. Most likely, these are the pages to which
 10 someone performing a search would like to direct his or her attention. Looked at another way, the importance of a page is directly related to the steady-state probability that a random web surfer ends up at the page after following a large number of links. Because there is a larger probability that a surfer will
 15 end up at an important page than at an unimportant page, this method of ranking pages assigns higher ranks to the more important pages.

In one aspect of the invention, a computer implemented method is
 20 provided for calculating an importance rank for N linked nodes of a linked database. The method comprises the steps of:

- (a) selecting an initial N-dimensional vector \mathbf{p}_0 ;
- (b) computing an approximation \mathbf{p}_n to a steady-state probability
 25 \mathbf{p}_∞ in accordance with the equation $\mathbf{p}_n = \mathbf{A}^n \mathbf{p}_0$, where \mathbf{A} is an NxN transition probability matrix having elements $\mathbf{A}[i][j]$ representing a probability of moving from node i to node j; and
- (c) determining a rank $r[k]$ for a node k from a k^{th} component of \mathbf{p}_n .

30

In a preferred embodiment, the matrix \mathbf{A} is chosen so that an importance rank of a node is calculated, in part, from a weighted sum of importance ranks of backlink nodes of the node, where each of the backlink nodes is weighted in dependence upon

page document and where the directed connections between nodes correspond to links from one document to another. A given node has a set of forward links that connect it to children nodes, and a set of backward links that connect it to parent nodes. FIG. 1 shows a typical relationship between three hypertext documents A, B, and C. As shown in this particular figure, the first links in documents B and C are pointers to document A. In this case we say that B and C are backlinks of A, and that A is a forward link of B and of C. Documents B and C also have other forward links to documents that are not shown.

Although the ranking method of the present invention is superficially similar to the well known idea of citation counting, the present method is more subtle and complex than citation counting and gives far superior results. In a simple citation ranking, the rank of a document A which has n backlink pages is simply

$$r(A) = n.$$

According to one embodiment of the present method of ranking, the backlinks from different pages are weighted differently and the number of links on each page is normalized. More precisely, the rank of a page A is defined according to the present invention as

$$r(A) = \frac{\alpha}{N} + (1-\alpha) \left(\frac{r(B_1)}{|B_1|} + \dots + \frac{r(B_n)}{|B_n|} \right),$$

where B_1, \dots, B_n are the backlink pages of A, $r(B_1), \dots, r(B_n)$ are their ranks, $|B_1|, \dots, |B_n|$ are their numbers of forward links, and α is a constant in the interval $[0,1]$, and N is the total number of pages in the web. This definition is clearly

more complicated and subtle than the simple citation rank. Like the citation rank, this definition yields a page rank that increases as the number of backlinks increases. But the present method considers a citation from a highly ranked backlink as more important than a citation from a lowly ranked backlink (provided both citations come from backlink documents that have an equal number of forward links). In the present invention, it is possible, therefore, for a document with only one backlink (from a very highly ranked page) to have a higher rank than another document with many backlinks (from very low ranked pages). This is not the case with simple citation ranking.

The ranks form a probability distribution over web pages, so that the sum of ranks over all web pages is unity. The rank of a page can be interpreted as the probability that a surfer will be at the page after following a large number of forward links. The constant α in the formula is interpreted as the probability that the web surfer will jump randomly to any web page instead of following a forward link. The page ranks for all the pages can be calculated using a simple iterative algorithm, and corresponds to the principal eigenvector of the normalized link matrix of the web, as will be discussed in more detail below.

In order to illustrate the present method of ranking, consider the simple web of three documents shown in FIG. 2. For simplicity of illustration, we assume in this example that $r=0$. Document A has a single backlink to document C, and this is the only forward link of document C, so

$$r(A) = r(C).$$

Document B has a single backlink to document A, but this is one of two forward links of document A, so

$$r(B) = r(A)/2.$$

Document C has two backlinks. One backlink is to document B, and this is the only forward link of document B. The other
 5 backlink is to document A via the other of the two forward links from A. Thus

$$r(C) = r(B) + r(A)/2.$$

10 In this simple illustrative case we can see by inspection that $r(A) = 0.4$, $r(B) = 0.2$, and $r(C) = 0.4$. Although a typical value for α is ~ 0.1 , if for simplicity we set $\alpha = 0.5$ (which corresponds to a 50% chance that a surfer will randomly jump to one of the three pages rather than following a forward link),
 15 then the mathematical relationships between the ranks become more complicated. In particular, we then have

$$\begin{aligned} r(A) &= 1/6 + r(C)/2, \\ r(B) &= 1/6 + r(A)/4, \text{ and} \\ 20 \quad r(C) &= 1/6 + r(A)/4 + r(B)/2. \end{aligned}$$

The solution in this case is $r(A) = 14/39$, $r(B) = 10/39$, and $r(C) = 15/39$.

25 In practice, there are millions of documents and it is not possible to find the solution to a million equations by inspection. Accordingly, in the preferred embodiment a simple iterative procedure is used. As the initial state we may simply set all the ranks equal to $1/N$. The formulas are then used to
 30 calculate a new set of ranks based on the existing ranks. In the case of millions of documents, sufficient convergence typically takes on the order of 100 iterations. It is not always necessary or even desirable, however, to calculate the rank of every page with high precision. Even approximate rank

values, using two or more iterations, can provide very valuable, or even superior, information.

The iteration process can be understood as a steady-state probability distribution calculated from a model of a random surfer. This model is mathematically equivalent to the explanation described above, but provides a more direct and concise characterization of the procedure. The model includes (a) an initial N-dimensional probability distribution vector \mathbf{p}_0 where each component $\mathbf{p}_0[i]$ gives the initial probability that a random surfer will start at a node i , and (b) an $N \times N$ transition probability matrix \mathbf{A} where each component $\mathbf{A}[i][j]$ gives the probability that the surfer will move from node i to node j . The probability distribution of the graph after the surfer follows one link is $\mathbf{p}_1 = \mathbf{A}\mathbf{p}_0$, and after two links the probability distribution is $\mathbf{p}_2 = \mathbf{A}\mathbf{p}_1 = \mathbf{A}^2\mathbf{p}_0$. Assuming this iteration converges, it will converge to a steady-state probability

$$\mathbf{p}_\infty = \lim_{n \rightarrow \infty} \mathbf{A}^n \mathbf{p}_0,$$

which is a dominant eigenvector of \mathbf{A} . The iteration circulates the probability through the linked nodes like energy flows through a circuit and accumulates in important places. Because pages with no links occur in significant numbers and bleed off energy, they cause some complication with computing the ranking. This complication is caused by the fact they can add huge amounts to the "random jump" factor. This, in turn, causes loops in the graph to be highly emphasized which is not generally a desirable property of the model. In order to address this problem, these childless pages can simply be removed from the model during the iterative stages, and added back in after the iteration is complete. After the childless

pages are added back in, however, the same number of iterations that was required to remove them should be done to make sure they all receive a value. (Note that in order to ensure convergence, the norm of \mathbf{p}_i must be made equal to 1 after each iteration.) An alternate method to control the contribution of the childless nodes is to only estimate the steady state by iterating a small number of times.

The rank $r[i]$ of a node i can then be defined as a function of this steady-state probability distribution. For example, the rank can be defined simply by $r[i] = \mathbf{p}_\infty[i]$. This method of calculating rank is mathematically equivalent to the iterative method described first. Those skilled in the art will appreciate that this same method can be characterized in various different ways that are mathematically equivalent. Such characterizations are obviously within the scope of the present invention. Because the rank of various different documents can vary by orders of magnitude, it is convenient to define a logarithmic rank

$$r[i] = \log \frac{\mathbf{p}_\infty[i]}{\min_{k \in [1, N]} \{ \mathbf{p}_\infty[k] \}}$$

which assigns a rank of 0 to the lowest ranked node and increases by 1 for each order of magnitude in importance higher than the lowest ranked node.

In a preferred embodiment, a finite number of iterations are performed to approximate \mathbf{p}_∞ . The initial distribution can be selected to be uniform or non-uniform. A uniform distribution would set each component of \mathbf{p}_0 equal to $1/N$. A non-uniform distribution, for example, can divide the initial probability among a few nodes which are known a priori to have relatively

large importance. This non-uniform distribution decreases the number of iterations required to obtain a close approximation to p_∞ and also is one way to reduce the effect of artificially inflating relevance by adding unrelated terms.

5

In a preferred embodiment, the transition matrix \mathbf{A} is given by

$$\mathbf{A} = \frac{\alpha}{N} \mathbf{1} + (1-\alpha)\mathbf{B},$$

10

where $\mathbf{1}$ is an $N \times N$ matrix consisting of all 1s, α is the probability that a surfer will jump randomly to any one of the N nodes, and \mathbf{B} is a matrix whose elements $\mathbf{B}[i][j]$ are given by

$$\mathbf{B}[i][j] = \begin{cases} \frac{1}{n_i} & \text{if node } i \text{ points to node } j \\ 0 & \text{otherwise} \end{cases},$$

15

where n_i is the total number of forward links from node i . The $(1-\alpha)$ factor acts as a damping factor that limits the extent to which a document's rank can be inherited by children documents. This models the fact that users typically jump to a different place in the web after following a few links. The value of α is typically around 15%. Including this damping is important when many iterations are used to calculate the rank so that there is no artificial concentration of rank importance within loops of the web. Alternatively, one may set $\alpha=0$ and only iterate a few

20

25 times in the calculation.

There are several ways that this method can be adapted or altered for various purposes. As already mentioned above, rather than including the random linking probability α equally

among all nodes, it can be divided in various ways among all the sites by changing the $\mathbb{1}$ matrix to another matrix. For example, it could be distributed so that a random jump takes the surfer to one of a few nodes that have a high importance, and will not take the surfer to any of the other nodes. This can be very effective in preventing deceptively tagged documents from receiving artificially inflated relevance. Alternatively, the random linking probability could be distributed so that random jumps do not happen from high importance nodes, and only happen from other nodes. This distribution would model a surfer who is more likely to make random jumps from unimportant sites and follow forward links from important sites. A modification to avoid drawing unwarranted attention to pages with artificially inflated relevance is to ignore local links between documents and only consider links between separate domains. Because the links from other sites to the document are not directly under the control of a typical web site designer, it is then difficult for the designer to artificially inflate the ranking. A simpler approach is to weight links from pages contained on the same web server less than links from other servers. Also, in addition to servers, internet domains and any general measure of the distance between links could be used to determine such a weighting.

Additional modifications can further improve the performance of this method. Rank can be increased for documents whose backlinks are maintained by different institutions and authors in various geographic locations. Or it can be increased if links come from unusually important web locations such as the root page of a domain.

Links can also be weighted by their relative importance within a document. For example, highly visible links that are near the top of a document can be given more weight. Also, links that are

in large fonts or emphasized in other ways can be given more weight. In this way, the model better approximates human usage and authors' intentions. In many cases it is appropriate to assign higher value to links coming from pages that have been modified recently since such information is less likely to be obsolete.

The present method has the advantage that the convergence is very fast (a few hours using current processors) and it is much less expensive than building a full-text index. This speed allows the ranking to be customized or personalized for specific users. For example, a user's home page and/or bookmarks can be given a large initial importance, and/or a high probability of a random jump returning to it. This high rating essentially indicates to the system that the person's homepage and/or bookmarks does indeed contain subjects of importance that should be highly ranked. This procedure essentially trains the system to recognize pages related to the person's interests.

The present method of determining the rank of a document can also be used to enhance the display of documents. In particular, each link in a document can be annotated with an icon, text, or other indicator of the rank of the document that each link points to. Anyone viewing the document can then easily see the relative importance of various links in the document.

The present method of ranking documents in a database can also be useful for estimating the amount of attention any document receives on the web since it models human behavior when surfing the web. Estimating the importance of each backlink to a page can be useful for many purposes including site design, business arrangements with the backlinkers, and marketing. The effect of potential changes to the hypertext structure can be evaluated by adding them to the link structure and recomputing the ranking.

Real usage data, when available, can be used as a starting point for the model and as the distribution for the alpha factor. This can allow this ranking model to fill holes in the usage data, and provide a more accurate or comprehensive picture.. Thus, although this method of ranking does not necessarily match the actual traffic, it nevertheless measures the degree of exposure a document has throughout the web.

Perhaps the most important application of the present ranking technique is to enhance the quality of results from web search engines. In this application of the present invention, the ranking method of the invention is integrated into a web search engine to produce results far superior to existing methods in quality and performance. A search engine employing the ranking method of the present invention has all the advantages of automation while producing results comparable to a human maintained categorized system. In this approach, a web crawler explores the web and creates an index of the web content, as well as a directed graph of nodes corresponding to the structure of hyperlinks. The nodes of the graph (i.e. pages of the web) are then ranked according to importance according to the method of the present invention.

The search engine is used to locate documents that match the specified search criteria, either by searching full text, or by searching titles only. In addition, the search can include the anchor text associated with backlinks to the page. This idea has several advantages in this context. First, anchors often provide more accurate descriptions of web pages than the pages themselves. Second, anchors may exist for images, programs, and other objects that cannot be indexed by a text-based search engine. This also makes it possible to return web pages which have not actually been crawled. In addition, the engine can

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compare the search terms with a list of its backlink document titles. Thus, even though the text of the document itself may not match the search terms, if the document is cited by documents whose titles or backlink anchor text match the search terms, the document will be considered a match. In addition to or instead of the anchor text, the text in the immediate vicinity of the backlink anchor text can also be compared to the search terms in order to improve the search.

Once a set of documents is identified that match the search terms, the list of documents is then sorted with high ranking documents first and low ranking documents last. The ranking in this case is defined as a function which combines all of the above factors such as the objective ranking and textual matching. If desired, the results can be grouped by category or site as well.

It will be clear to one skilled in the art that the above embodiment may be altered in many ways without departing from the scope of the invention. Accordingly, the scope of the invention should be determined by the following claims and their legal equivalents.

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CLAIMS

What is claimed is:

- 1 1. A computer implemented method for calculating an importance
2 rank for N linked nodes of a linked database, the method
3 comprising the steps of:
4
5 (a) selecting an initial N-dimensional vector \mathbf{p}_0 ;
6 (b) computing an approximation \mathbf{p}_n to a steady-state probability
7 \mathbf{p}_∞ in accordance with the equation $\mathbf{p}_n = \mathbf{A}^n \mathbf{p}_0$, where \mathbf{A} is an
8 $N \times N$ transition probability matrix having elements $\mathbf{A}[i][j]$
9 representing a probability of moving from node i to node j ;
10 and
11 (c) determining a rank $r[k]$ for a node k from a k^{th} component
12 of \mathbf{p}_n .
13
- 1 2. The method of claim 1 wherein the matrix \mathbf{A} is chosen so
2 that an importance rank of a node is calculated, in part,
3 from a weighted sum of importance ranks of backlink nodes
4 of the node.
5
- 1 3. The method of claim 2 wherein the importance ranks of each
2 of the backlink nodes is weighted in dependence upon the
3 total number of links in the backlink node.
4
- 1 4. The method of claim 1 wherein the matrix \mathbf{A} is chosen so
2 that an importance rank of a node is calculated, in part,
3 from a constant α representing the probability that a
4 surfer will randomly jump to the node.
5
- 1 5. The method of claim 1 wherein the matrix \mathbf{A} is chosen so
2 that an importance rank of a node is calculated, in part,

ABSTRACT OF THE DISCLOSURE

A method assigns importance ranks to nodes in a linked database, such as any database of documents containing citations, the world wide web or any other hypermedia database. The rank assigned to a document is calculated from the ranks of documents citing it. In addition, the rank of a document is calculated from a constant representing the probability that a browser through the database will randomly jump to the document. The method is particularly useful in enhancing the performance of search engine results for hypermedia databases, such as the world wide web, whose documents have a large variation in quality.

ABSTRACT OF THE DISCLOSURE

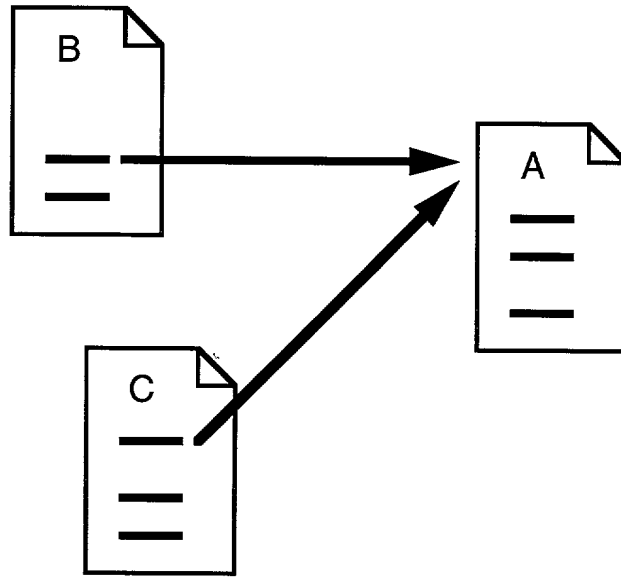


FIG. 1

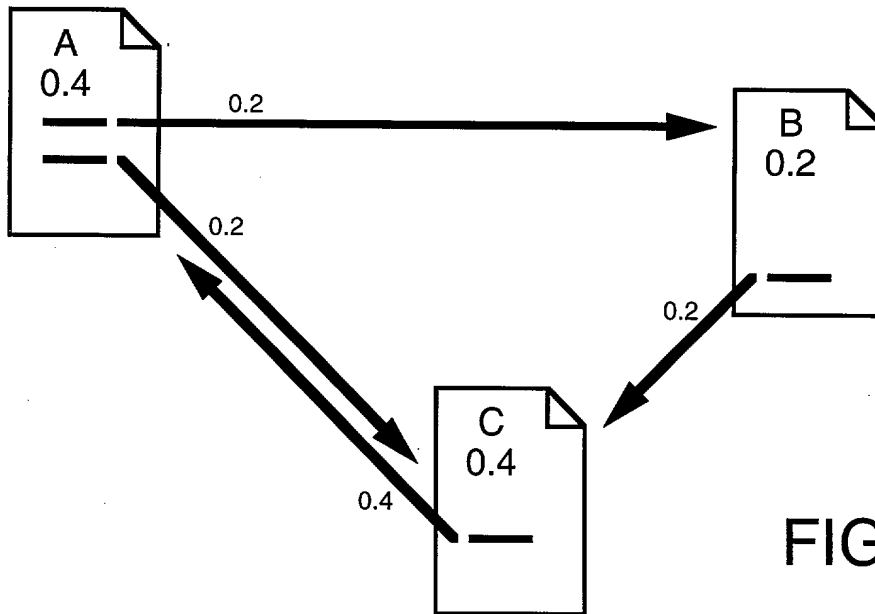
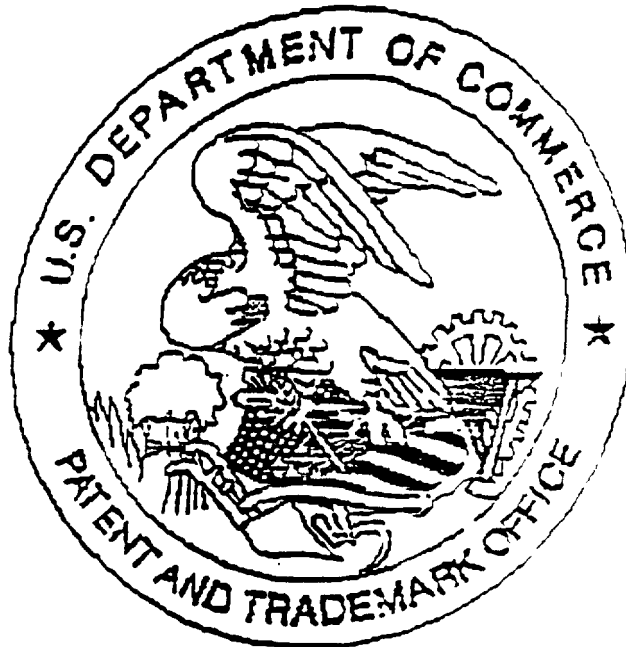


FIG. 2

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UTILITY PATENT APPLICATION TRANSMITTAL	Attorney Docket No. S96-213	Total Pages
	First Named Inventor LAWRENCE PAGE	
	Title METHOD FOR NODE RANKING IN A LINKED DATABASE	

APPLICATION ELEMENTS	ACCOMPANYING APPLICATION PARTS
1. <input checked="" type="checkbox"/> Fee Transmittal Form (two copies)	8. <input type="checkbox"/> Assignment cover sheet and document(s)
2. <input checked="" type="checkbox"/> Specification Total Pages: 19	9. <input type="checkbox"/> Power of Attorney by Assignee <input type="checkbox"/> with CFR 3.73(b) statement
3. <input checked="" type="checkbox"/> Drawing(s) Total Sheets: 1	10. <input type="checkbox"/> English Translation Document
4. <input type="checkbox"/> Oath or Declaration Total Pages: <input type="checkbox"/>	11. <input type="checkbox"/> IDS/PTO-1449 <input type="checkbox"/> with copies of cited references
a. <input type="checkbox"/> Newly executed (original or copy)	12. <input type="checkbox"/> Preliminary Amendment
b. <input type="checkbox"/> Copy from a prior application (CFR 1.63(d)) (complete Box 17 and note Box 5 below)	13. <input checked="" type="checkbox"/> Return Receipt Postcard (MPEP 503)
i. <input type="checkbox"/> Signed statement deleting inventors named in the prior application, see CFR 1.63(d)(2) and 1.33(b)	14. <input type="checkbox"/> Small Entity Statement <input type="checkbox"/> Statement filed in prior application Status still proper and desired
5. <input type="checkbox"/> Incorporation by Reference (if 4b is checked) The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated therein by reference.	15. <input type="checkbox"/> Certified Copy of Priority Document(s) (if foreign priority is claimed)
6. <input type="checkbox"/> Microfiche Computer Program (<i>Appendix</i>)	16. <input type="checkbox"/> Other:
7. <input type="checkbox"/> Nucleotide/Amino Acid Sequence Submission (all the following are necessary)	
a. <input type="checkbox"/> Computer Readable Copy	
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c. <input type="checkbox"/> Statement verifying identity of above copies	
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FEE TRANSMITTAL

Application Number:	Not yet Assigned
Filing Date:	1/9/98
First Named Inventor:	Lawrence Page
Title of Invention:	Method for Node Ranking in a Linked Database
Group Art Unit:	not yet assigned
Examiner:	not yet assigned
Attorney Docket No.:	S96-213

Fee Calculation:
 for Large Entity / Small Entity.

Basic Filing Fee:

<input checked="" type="checkbox"/> Utility Patent Application:	\$790 / \$395	\$395
<input type="checkbox"/> Provisional Patent Application:	\$150 / \$75	\$

Claims:

<input type="checkbox"/> Number of Total Claims Over 20:	<input type="checkbox"/>	x \$22 / \$11 =	\$
<input type="checkbox"/> No. of Independent Claims Over 3:	<input type="checkbox"/>	x \$82 / \$41 =	\$

Other Fees:

<input type="checkbox"/> Extension of time, 1 month	\$110 / \$55	\$
<input type="checkbox"/> Extension of time, 2 months	\$400 / \$200	\$
<input type="checkbox"/> Extension of time, 3 months	\$950 / \$475	\$
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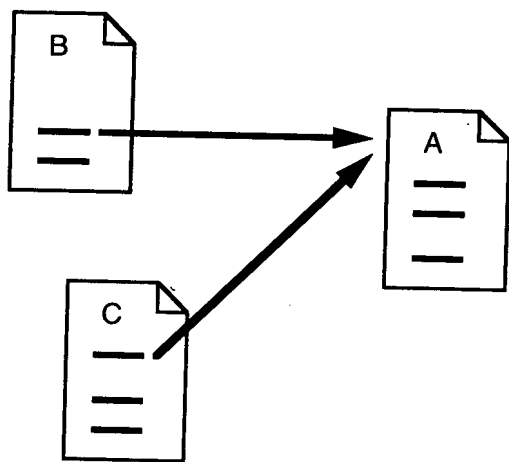


FIG. 1

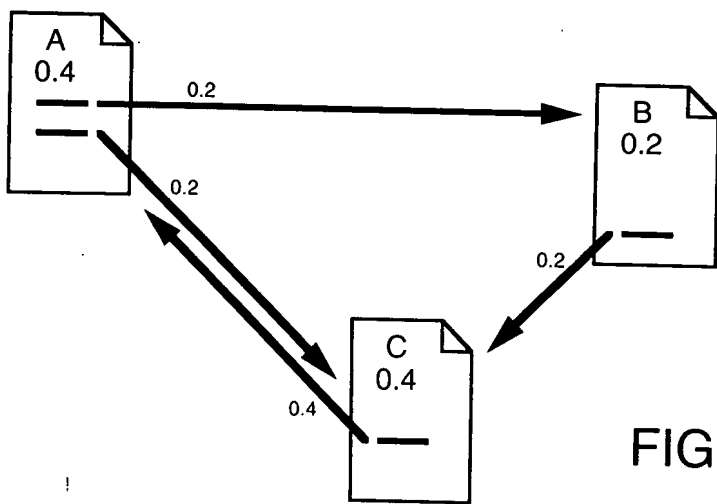


FIG. 2

PAINT UP DRAWINGS
AS ORIGINALLY FILED

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Hyperlink Search Engine, developed by IDD Information Services, (<http://rankdex.gari.com/>) uses backlink information (i.e., information from pages that contain links to the current page) to assist in identifying relevant web documents. Rather than using the content of a document to determine relevance, the technique uses the anchor text of links to the document to characterize the relevance of a document. The idea of associating anchor text with the page the text points to was first implemented in the World Wide Web Worm (Oliver A. McBryan, GENVL and WWW: Tools for Taming the Web, First International Conference on the World Wide Web, CERN, Geneva, May 25-27, 1994). The Hyperlink Search Engine has applied this idea to assist in determining document relevance in a search. In particular, search query terms are compared to a collection of anchor text descriptions that point to the page, rather than to a keyword index of the page content. A rank is then assigned to a document based on the degree to which the search terms match the anchor descriptions in its backlink documents.

The well known idea of citation counting is a simple method for determining the importance of a document by counting its number of citations, or backlinks. The citation rank $r(A)$ of a document which has n backlink pages is simply

$$r(A) = n.$$

In the case of databases whose content is of relatively uniform quality and importance it is valid to assume that a highly cited document should be of greater interest than a document with only one or two citations. Many databases, however, have extreme variations in the quality and importance of documents. In these cases, citation ranking is overly simplistic. For example, citation ranking will give the same rank to a document that is

the total number of links in the backlink node. In addition, the importance rank of a node is calculated, in part, from a constant α representing the probability that a surfer will randomly jump to the node. The importance rank of a node can also be calculated, in part, from a measure of distances between the node and backlink nodes of the node. The initial N-dimensional vector P_0 may be selected to represent a uniform probability distribution, or a non-uniform probability distribution which gives weight to a predetermined set of nodes.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a diagram of the relationship between three linked hypertext documents according to the invention.

Fig. 2 is a diagram of a three-document web illustrating the rank associated with each document in accordance with the present invention.

Fig. 3 is a flowchart of one embodiment of the invention

DETAILED DESCRIPTION

Although the following detailed description contains many specifics for the purposes of illustration, anyone of ordinary skill in the art will appreciate that many variations and alterations to the following details are within the scope of the invention. Accordingly, the following ~~preferred~~ ^{are} embodiments of the invention ~~is~~ set forth without any loss of generality to, and without imposing limitations upon, the claimed invention. For support in reducing the present invention to practice, the inventor acknowledges Sergey Brin, Scott Hassan, Rajeev Motwani, Alan Steremberg, and Terry Winograd.

A linked database (i.e. any database of documents containing mutual citations, such as the world wide web or other hypermedia archive, a dictionary or thesaurus, and a database of academic articles, patents, or court cases) can be represented as a directed graph of N nodes, where each node corresponds to a web

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more complicated and subtle than the simple citation rank. Like the citation rank, this definition yields a page rank that increases as the number of backlinks increases. But the present method considers a citation from a highly ranked backlink as more important than a citation from a lowly ranked backlink (provided both citations come from backlink documents that have an equal number of forward links). In the present invention, it is possible, therefore, for a document with only one backlink (from a very highly ranked page) to have a higher rank than another document with many backlinks (from very low ranked pages). This is not the case with simple citation ranking.

The ranks form a probability distribution over web pages, so that the sum of ranks over all web pages is unity. The rank of a page can be interpreted as the probability that a surfer will be at the page after following a large number of forward links. The constant α in the formula is interpreted as the probability that the web surfer will jump randomly to any web page instead of following a forward link. The page ranks for all the pages can be calculated using a simple iterative algorithm, and corresponds to the principal eigenvector of the normalized link matrix of the web, as will be discussed in more detail below.

In order to illustrate the present method of ranking, consider the simple web of three documents shown in FIG. 2. For simplicity of illustration, we assume in this example that $r=0$. Document A has a single backlink to document C, and this is the only forward link of document C, so

$$r(A) = r(C).$$

Document B has a single backlink to document A, but this is one of two forward links of document A, so

$$r(B) = r(A)/2.$$

Document C has two backlinks. One backlink is to document B, and this is the only forward link of document B. The other
5 backlink is to document A via the other of the two forward links from A. Thus

$$r(C) = r(B) + r(A)/2.$$

10 In this simple illustrative case we can see by inspection that $r(A) = 0.4$, $r(B) = 0.2$, and $r(C) = 0.4$. Although a typical value for α is ~ 0.1 , if for simplicity we set $\alpha = 0.5$ (which corresponds to a 50% chance that a surfer will randomly jump to
15 one of the three pages rather than following a forward link), then the mathematical relationships between the ranks become more complicated. In particular, we then have

$$\begin{aligned} r(A) &= 1/6 + r(C)/2, \\ r(B) &= 1/6 + r(A)/4, \text{ and} \\ 20 \quad r(C) &= 1/6 + r(A)/4 + r(B)/2. \end{aligned}$$

The solution in this case is $r(A) = 14/39$, $r(B) = 10/39$, and $r(C) = 15/39$.

25 In practice, there are millions of documents and it is not possible to find the solution to a million equations by inspection. Accordingly, in the preferred embodiment a simple iterative procedure is used. As the initial state we may simply set all the ranks equal to $1/N$. The formulas are then used to
30 calculate a new set of ranks based on the existing ranks. In the case of millions of documents, sufficient convergence typically takes on the order of 100 iterations. It is not always necessary or even desirable, however, to calculate the rank of every page with high precision. Even approximate rank

values, using two or more iterations, can provide very valuable, or even superior, information.

The iteration process can be understood as a steady-state probability distribution calculated from a model of a random surfer. This model is mathematically equivalent to the explanation described above, but provides a more direct and concise characterization of the procedure. The model includes (a) an initial N-dimensional probability distribution vector \mathbf{p}_0 where each component $\mathbf{p}_0[i]$ gives the initial probability that a random surfer will start at a node i , and (b) an $N \times N$ transition probability matrix \mathbf{A} where each component $\mathbf{A}[i][j]$ gives the probability that the surfer will move from node i to node j . The probability distribution of the graph after the surfer follows one link is $\mathbf{p}_1 = \mathbf{A}\mathbf{p}_0$, and after two links the probability distribution is $\mathbf{p}_2 = \mathbf{A}\mathbf{p}_1 = \mathbf{A}^2\mathbf{p}_0$. Assuming this iteration converges, it will converge to a steady-state probability

$$\mathbf{p}_\infty = \lim_{n \rightarrow \infty} \mathbf{A}^n \mathbf{p}_0,$$

which is a dominant eigenvector of \mathbf{A} . The iteration circulates the probability through the linked nodes like energy flows through a circuit and accumulates in important places. Because pages with no links occur in significant numbers and bleed off energy, they cause some complication with computing the ranking. This complication is caused by the fact they can add huge amounts to the "random jump" factor. This, in turn, causes loops in the graph to be highly emphasized which is not generally a desirable property of the model. In order to address this problem, these childless pages can simply be removed from the model during the iterative stages, and added back in after the iteration is complete. After the childless

pages are added back in, however, the same number of iterations that was required to remove them should be done to make sure they all receive a value. (Note that in order to ensure convergence, the norm of p_i must be made equal to 1 after each iteration.) An alternate method to control the contribution of the childless nodes is to only estimate the steady state by iterating a small number of times.

The rank $r[i]$ of a node i can then be defined as a function of this steady-state probability distribution. For example, the rank can be defined simply by $r[i] = p_\infty[i]$. This method of calculating rank is mathematically equivalent to the iterative method described first. Those skilled in the art will appreciate that this same method can be characterized in various different ways that are mathematically equivalent. Such characterizations are obviously within the scope of the present invention. Because the rank of various different documents can vary by orders of magnitude, it is convenient to define a logarithmic rank

$$r[i] = \log \frac{p_\infty[i]}{\min_{k \in [1, N]} \{ p_\infty[k] \}}$$

which assigns a rank of 0 to the lowest ranked node and increases by 1 for each order of magnitude in importance higher than the lowest ranked node.

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In ~~a preferred~~ ^{one particular} embodiment, a finite number of iterations are performed to approximate p_∞ . The initial distribution can be selected to be uniform or non-uniform. A uniform distribution would set each component of p_0 equal to $1/N$. A non-uniform distribution, for example, can divide the initial probability among a few nodes which are known a priori to have relatively

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large importance. This non-uniform distribution decreases the number of iterations required to obtain a close approximation to p_∞ and also is one way to reduce the effect of artificially inflating relevance by adding unrelated terms.

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In ^{another particular} ~~a~~ preferred embodiment, the transition matrix **A** is given by

$$\mathbf{A} = \frac{\alpha}{N} \mathbf{1} + (1-\alpha)\mathbf{B},$$

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10 where **1** is an NxN matrix consisting of all 1s, α is the probability that a surfer will jump randomly to any one of the N nodes, and **B** is a matrix whose elements **B**[i][j] are given by

$$\mathbf{B}[i][j] = \begin{cases} \frac{1}{n_i} & \text{if node } i \text{ points to node } j \\ 0 & \text{otherwise} \end{cases}$$

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15

where n_i is the total number of forward links from node i . The $(1-\alpha)$ factor acts as a damping factor that limits the extent to which a document's rank can be inherited by children documents. This models the fact that users typically jump to a different place in the web after following a few links. The value of α is typically around 15%. Including this damping is important when many iterations are used to calculate the rank so that there is no artificial concentration of rank importance within loops of the web. Alternatively, one may set $\alpha=0$ and only iterate a few times in the calculation.

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^{Consistent with the present invention, there} ~~there~~ are several ways that this method can be adapted or altered for various purposes. As already mentioned above, rather than including the random linking probability α equally

among all nodes, it can be divided in various ways among all the sites by changing the $\mathbb{1}$ matrix to another matrix. For example, it could be distributed so that a random jump takes the surfer to one of a few nodes that have a high importance, and will not take the surfer to any of the other nodes. This can be very effective in preventing deceptively tagged documents from receiving artificially inflated relevance. Alternatively, the random linking probability could be distributed so that random jumps do not happen from high importance nodes, and only happen from other nodes. This distribution would model a surfer who is more likely to make random jumps from unimportant sites and follow forward links from important sites. A modification to avoid drawing unwarranted attention to pages with artificially inflated relevance is to ignore local links between documents and only consider links between separate domains. Because the links from other sites to the document are not directly under the control of a typical web site designer, it is then difficult for the designer to artificially inflate the ranking. A simpler approach is to weight links from pages contained on the same web server less than links from other servers. Also, in addition to servers, internet domains and any general measure of the distance between links could be used to determine such a weighting.

Additional modifications can further improve the performance of this method. Rank can be increased for documents whose backlinks are maintained by different institutions and authors in various geographic locations. Or it can be increased if links come from unusually important web locations such as the root page of a domain.

Links can also be weighted by their relative importance within a document. For example, highly visible links that are near the top of a document can be given more weight. Also, links that are

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in large fonts or emphasized in other ways can be given more weight. In this way, the model better approximates human usage and authors' intentions. In many cases it is appropriate to assign higher value to links coming from pages that have been modified recently since such information is less likely to be obsolete.

5

~~The present method has~~ the advantage that the convergence is very fast (a few hours using current processors) and it is much less expensive than building a full-text index. This speed allows the ranking to be customized or personalized for specific users. For example, a user's home page and/or bookmarks can be given a large initial importance, and/or a high probability of a random jump returning to it. This high rating essentially indicates to the system that the person's homepage and/or bookmarks does indeed contain subjects of importance that should be highly ranked. This procedure essentially trains the system to recognize pages related to the person's interests.

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The present method of determining the rank of a document can also be used to enhance the display of documents. In particular, each link in a document can be annotated with an icon, text, or other indicator of the rank of the document that each link points to. Anyone viewing the document can then easily see the relative importance of various links in the document.

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The present method of ranking documents in a database can also be useful for estimating the amount of attention any document receives on the web since it models human behavior when surfing the web. Estimating the importance of each backlink to a page can be useful for many purposes including site design, business arrangements with the backlinkers, and marketing. The effect of potential changes to the hypertext structure can be evaluated by adding them to the link structure and recomputing the ranking.

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Real usage data, when available, can be used as a starting point for the model and as the distribution for the alpha factor. This can allow this ranking model to fill holes in the usage data, and provide a more accurate or comprehensive picture.. Thus, although this method of ranking does not necessarily match the actual traffic, it nevertheless measures the degree of exposure a document has throughout the web.

Another ^{and embodiment} ~~Perhaps the most important application of the present ranking invention is directed to enhancing technique is to enhance~~ the quality of results from web search engines. In this application of the present invention, ^a ~~the~~ ranking method ^{according to} of the invention is integrated into a web search engine to produce results far superior to existing methods in quality and performance. A search engine employing ^a ~~the~~ ranking method of the present invention ^{Provides} ~~has all the advantages~~ of automation while producing results comparable to a human maintained categorized system. In this approach, a web crawler explores the web and creates an index of the web content, as well as a directed graph of nodes corresponding to the structure of hyperlinks. The nodes of the graph (i.e. pages of the web) are then ranked according to importance ~~according to the method~~ of the present invention. ^E

The search engine is used to locate documents that match the specified search criteria, either by searching full text, or by searching titles only. In addition, the search can include the anchor text associated with backlinks to the page. This ^{approach} ~~idea~~ has several advantages in this context. First, anchors often provide more accurate descriptions of web pages than the pages themselves. Second, anchors may exist for images, programs, and other objects that cannot be indexed by a text-based search engine. This also makes it possible to return web pages which have not actually been crawled. In addition, the engine can

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SUBJECT: 2540000
0004327-010998

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compare the search terms with a list of its backlink document titles. Thus, even though the text of the document itself may not match the search terms, if the document is cited by documents whose titles or backlink anchor text match the search terms, the document will be considered a match. In addition to or instead of the anchor text, the text in the immediate vicinity of the backlink anchor text can also be compared to the search terms in order to improve the search.

Once a set of documents is identified that match the search terms, the list of documents is then sorted with high ranking documents first and low ranking documents last. The ranking in this case is ~~defined as~~ a function which combines all of the above factors such as the objective ranking and textual matching. If desired, the results can be grouped by category or site as well.

It will be clear to one skilled in the art that the above embodiments may be altered in many ways without departing from the scope of the invention. Accordingly, the scope of the invention should be determined by the following claims and their legal equivalents.

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E
965070-22340060

CLAIMS

What is claimed is:

Sub
A

050400050
2340050

1 A computer implemented method for calculating an importance
2 rank for N linked nodes of a linked database, the method
3 comprising the steps of:

- 4 (a) selecting an initial N-dimensional vector p_0 ;
- 5 (b) computing an approximation p_n to a steady-state probability
- 6 p_∞ in accordance with the equation $p_n = A^n p_0$, where A is an
- 7 $N \times N$ transition probability matrix having elements $A[i][j]$
- 8 representing a probability of moving from node i to node j ;
- 9 and
- 10 (c) determining a rank $r[k]$ for a node k from a k^{th} component
- 11 of p_n .

1 2. The method of claim 1 wherein the matrix A is chosen so
2 that an importance rank of a node is calculated, in part,
3 from a weighted sum of importance ranks of backlink nodes
4 of the node.

1 3. The method of claim 2 wherein the importance ranks of each
2 of the backlink nodes is weighted in dependence upon the
3 total number of links in the backlink node.

1 4. The method of claim 1 wherein the matrix A is chosen so
2 that an importance rank of a node is calculated, in part,
3 from a constant α representing the probability that a
4 surfer will randomly jump to the node.

1 5. The method of claim 1 wherein the matrix A is chosen so
2 that an importance rank of a node is calculated, in part,

3 from a measure of distances between the node and backlink
4 nodes of the node.

5
1 6. The method of claim 1 wherein the initial N-dimensional
2 vector p_0 is selected to represent a uniform probability
3 distribution.

4
1 7. The method of claim 1 wherein the initial N-dimensional
2 vector p_0 is selected to represent a non-uniform
3 probability distribution, wherein a predetermined set of
4 nodes is given a relatively large initial probability.

5
1 8. ~~A computer implemented method for assigning a rank to N
2 nodes of a linked database, the method comprising calculating,
3 for a node, a weighted sum of ranks of backlink nodes to the
4 node, wherein each of the backlink nodes is weighted in
5 dependence upon the total number of links in the backlink node.~~

Sub
a2

866070 22840060

6
add
a3

add b5

Add E5

ABSTRACT OF THE DISCLOSURE

5 A method assigns importance ranks to nodes in a linked database, such as any database of documents containing citations, the world wide web or any other hypermedia database. The rank assigned to a document is calculated from the ranks of documents citing it. In addition, the rank of a document is calculated from a constant representing the probability that a browser through the database will randomly jump to the document. The

10 method is particularly useful in enhancing the performance of search engine results for hypermedia databases, such as the world wide web, whose documents have a large variation in quality.

ABSTRACT 2240060

15



UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS
UNITED STATES PATENT AND TRADEMARK OFFICE
WASHINGTON, D.C. 20231
www.uspto.gov



Bib Data Sheet

SERIAL NUMBER 09/004,827	FILING DATE 01/09/1998 RULE -	CLASS 707	GROUP ART UNIT 2771	ATTORNEY DOCKET NO. S96-213
------------------------------------	---	---------------------	-------------------------------	---------------------------------------

APPLICANTS
LAWRENCE PAGE, STANFORD, CA ;

**** CONTINUING DATA *******
THIS APPLN CLAIMS BENEFIT OF 60/035,205 01/10/1997

**** FOREIGN APPLICATIONS *******

IF REQUIRED, FOREIGN FILING LICENSE **** SMALL ENTITY ****
GRANTED ** 04/14/1998

Foreign Priority claimed <input type="checkbox"/> yes <input checked="" type="checkbox"/> no	STATE OR COUNTRY CA	SHEETS DRAWING 1	TOTAL CLAIMS 8	INDEPENDENT CLAIMS 2	
35 USC 119 (a-d) conditions met <input type="checkbox"/> yes <input checked="" type="checkbox"/> no <input type="checkbox"/> Met after Allowance					
Verified and Acknowledged	Examiner's Signature	Initials			

ADDRESS

HARRITY & SNYDER, L.L.P
3900 NORTH FAIRFAX DRIVE
SUITE 3900
ARLINGTON, VA 22203

TITLE

METHOD FOR NODE RANKING IN A LINKED DATABASE

FILING FEE RECEIVED
691

FEES: Authority has been given in Paper
No. _____ to charge/credit DEPOSIT ACCOUNT
No. _____ for following:

- All Fees
- 1.16 Fees (Filing)
- 1.17 Fees (Processing Ext. of time)
- 1.18 Fees (Issue)
- Other _____
- Credit

SERIAL NUMBER 09/004,827	FILING DATE 01/09/98	CLASS 707	GROUP ART UNIT 2772	ATTORNEY DOCKET NO. S96-213
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LAWRENCE PAGE, STANFORD, CA.

****CONTINUING DOMESTIC DATA*******
 VERIFIED PROVISIONAL APPLICATION NO. 60/035,205 01/10/97

YES *ll*

****371 (NAT'L STAGE) DATA*******
 VERIFIED

NO *ll*

****FOREIGN APPLICATIONS*******
 VERIFIED

NO *ll*

FOREIGN FILING LICENSE GRANTED 04/14/98

***** SMALL ENTITY *****

Foreign Priority claimed 5 USC 119 (a-d) conditions met	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no <input type="checkbox"/> yes <input checked="" type="checkbox"/> no	<input type="checkbox"/> Met after Allowance	STATE OR COUNTRY CA	SHEETS DRAWING 1	TOTAL CLAIMS 8	INDEPENDENT CLAIMS 2
--	--	--	------------------------	---------------------	-------------------	-------------------------

Verified and Acknowledged *ll* Examiner's Initials Initials

ADDRESS

~~THOMAS J MCFARLANE
 LUMEN INTELLECTUAL PROPERTY SERVICES
 426 LOWELL AVENUE
 PALO ALTO CA 94301-3813~~

Customer No #
21912

TITLE

METHOD FOR NODE RANKING IN A LINKED DATABASE

FILING FEE RECEIVED \$460	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT NO. _____ for the following:	<input type="checkbox"/> All Fees <input type="checkbox"/> 1.16 Fees (Filing) <input type="checkbox"/> 1.17 Fees (Processing Ext. of time) <input type="checkbox"/> 1.18 Fees (Issue) <input type="checkbox"/> Other _____ <input type="checkbox"/> Credit
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PATENT APPLICATION SERIAL NO. 09/004827

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
FEE RECORD SHEET

02/13/1998 CFARMER 00000006 09004827
01 FC:101 395.00 OP

PATENT APPLICATION FEE DETERMINATION RECORD

Effective October 1, 1997

Application or Docket Number

09/004827

CLAIMS AS FILED - PART I

(Column 1) (Column 2)

FOR	NUMBER FILED	NUMBER EXTRA
BASIC FEE		
TOTAL CLAIMS	8	minus 20 = * 12
INDEPENDENT CLAIMS	2	minus 3 = * 1
MULTIPLE DEPENDENT CLAIM PRESENT YES		

* If the difference in column 1 is less than zero, enter "0" in column 2

SMALL ENTITY TYPE

RATE	FEE
	395.00
x\$11=	
x41=	
+135=	
TOTAL	

OR OTHER THAN SMALL ENTITY

RATE	FEE
	790.00
x\$22=	
x82=	
+270=	270
TOTAL	1060

CLAIMS AS AMENDED - PART II

(Column 1) (Column 2) (Column 3)

AMENDMENT A		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	
	Total	*		Minus	**	=
	Independent	*		Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM						

SMALL ENTITY

RATE	ADDITIONAL FEE
x\$11=	
x41=	
+135=	
TOTAL ADDIT. FEE	

OR OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE
x\$22=	
x82=	
+270=	
TOTAL ADDIT. FEE	

AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	
	Total	*		Minus	**	=
	Independent	*		Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM						

RATE	ADDITIONAL FEE
x\$11=	
x41=	
+135=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
x\$22=	
x82=	
+270=	
TOTAL ADDIT. FEE	

AMENDMENT C		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	
	Total	*		Minus	**	=
	Independent	*		Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM						

RATE	ADDITIONAL FEE
x\$11=	
x41=	
+135=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
x\$22=	
x82=	
+270=	
TOTAL ADDIT. FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
 ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."
 *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."
 The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

**MULTIPLE DEPENDENT CLAIM
FEE CALCULATION SHEET
(FOR USE WITH FORM PTO-876)**

SERIAL NO.

FILING DATE

APPLICANT(S)

CLAIMS

	AS FILED		AFTER 1st AMENDMENT		AFTER 2nd AMENDMENT	
	IND.	DEP.	IND.	DEP.	IND.	DEP.
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TOTAL IND.	2					
TOTAL DEP.	6					
TOTAL	8					

	IND.	DEP.	IND.	DEP.	IND.	DEP.
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100						
TOTAL IND.						
TOTAL DEP.						
TOTAL						

SEARCHED

SEARCH NOTES (INCLUDING SEARCH STRATEGY)

Class	Sub.	Date	Exmr.
707	100	3 May 99	M
345	440	12 July 99	UL
707	5	13 July 99	↓
	7		↓
	513		↓
382	226	26 July 99	M
	229		↓
	230		↓
	231		↓
updated search		29 Feb 00	UL
updated search		10 May 00	UL
707	1-3, 100	20 Apr 01	UL
	5, 10,		↓
	104		↓
	501		↓
	513		↓

see 101 people

SM

	Date	Exmr.
again 13 July 99		
Paul Linze (707)	3 May 99	UL
Tan Mai (708) (no search)	13 July 99	UL
Tom Lee (395) (no search)		
Hassan Kizou (370) (no search)		
APS } attached		
STIC }		
Mark Linhart (345)	14 July 99	M
María Voss	20 July 99	UL
Garry Shaw (101 part)		
Bijan Tadayan (382)	26 July 99	UL
Jack Harvey (101 part)	28 Feb 00	UL
W. Amshury (707)		
A CM }		
IEEE }	1 Mar 00	M
EAST }		↓
Hosain Alam (707)		↓
KCM }	8, 10 May 00	UL
EAST }		
IEL }		
Hosain Alam (707)	May 00	UL
Wayne Amshury (707)		↓
EAST }		
IEL }	20, 22 April 01	UL
KCM }		↓

INTERFERENCE SEARCHED

Class	Sub.	Date	Exmr.
707	5	20 April 01	UL
	7		↓
	501		↓

ISSUE SLIP STAPLE AREA (for additional cross references)

	INITIALS	IC N O.	DATE
IN			
I	SM	SM	3-2
V	OTS	6819X	4-14-98

INDEX OF CLAIMS

..... Rejected N Non-elected
 Allowed I Interference
 (Through numeral) Canceled A Appeal
 Restricted O Objected

Claim	Date		Claim	Date	
	Final	Original		Final	Original
51			110		
52			112		
53			113		
54			114		
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99					
100					

If more than 150 claims or 10 actions
 staple additional sheet here

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	PATENT NUMBER	GROUP ART UNIT	FILE WRAPPER LOCATION
09/004,827	6285999	2171	9200 K 10072 1038 106

Change of Address/Power of Attorney

The following fields have been set to Customer Number 44989 on

- Correspondence Address
- Power of Attorney

The address of record for Customer Number 44989 is:

HARRITY & SNYDER, LLP
11240 WAPLES MILL ROAD
SUITE 300
FAIRFAX, VA 22030

The Practitioners of record for Customer Number 44989 are:

PTO INSTRUCTIONS:

Please take the following action when the correspondence address has been changed to a customer number:

- 1) Add 'ADDRESS CHANGE TO CUSTOMER NUMBER' on the next available content line of the File Jacket.**
- 2) Put a line through the old address on the File Jacket and enter the Customer Number as the new address.**
- 3) File this Notice in the File Jacket.**

Please take the following action when the correspondence address has NOT been changed:

- 1) File this Notice in the File Jacket**