CSE512 :: 27 Feb 2014

Final Project Progress Presentation

@EEBo37

CSE512 Students University of Washington

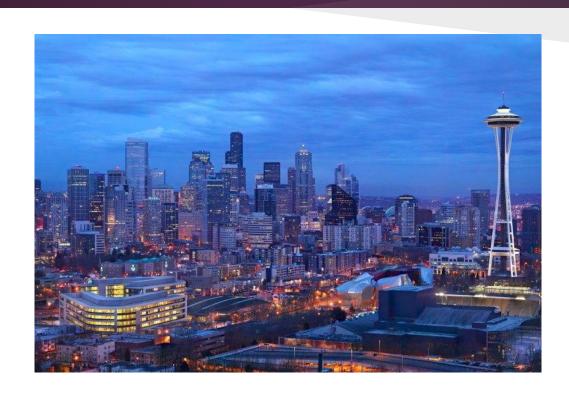
D5

$\overline{\mathrm{D}5}$

Data Driven Documents Driving Development

Fahad Pervaiz & Trevor Perrier

Data Driven Development



Data Driven Development



DHIS2: District Health Information System 2



DHIS2: District Health Information System 2



Current report visualizations are great for summary data analysis but not data exploration.

- No way to drill down into provincial level from national level.
- No interactive maps
- Complicated menu system for building reports.

DHIS2: District Health Information System 2

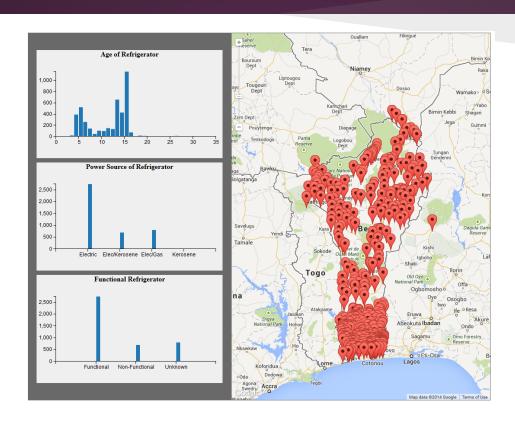


Current report visualizations are great for summary data analysis but not data exploration.

- No way to drill down into provincial level from national level.
- No interactive maps
- Complicated menu system for building reports.

Interactivity is key to data exploration, but this must be tied to the proper search queries to the underlying database.

Example: A3



What we plan to do.....

- Build a data exploration application to run on top of DHIS2
 - Focus on interactivity
 - Drill down from country ⇒ province ⇒ district ⇒ clinic
 - Easily add and remove data from the graph
 - Use brushing to filter graphed data.
 - Easily switch between views of data
 - Work with the DHIS2 app store so that any DHIS implementation can use our visualization tool.

Feedback?

- 1. What kind of data exploration are generally done by managers?
- 2. What data types are common for this exploration?
- 3. What are the most common ways to drill-down information on a visualization?
- 4. What drill-down operations works best on multidimensional dataset and are not complicated for our target population?
- 5. How to handle data density when user drills down on one dimension or branch and expands the visualization?

(Presented by Trevor Perrier and Fahad Pervaiz)

Dynamic News Timelines

0-Nov 2008

Michael Beswetherick & Joe Kohlmann

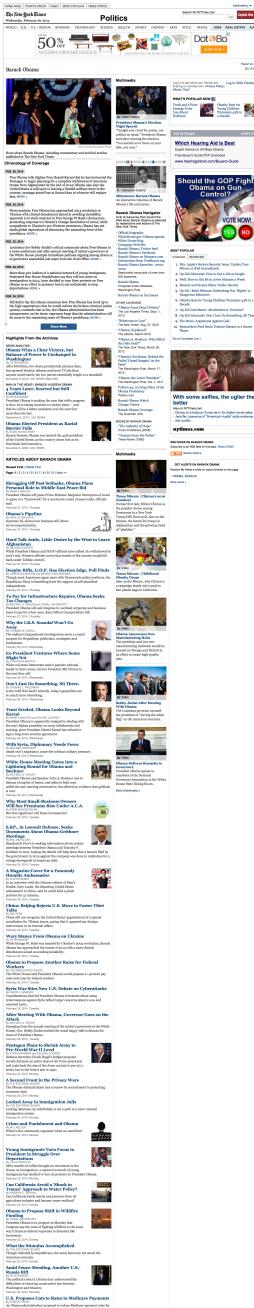


O

Currently

The New York Times Provides
Aggregate News Pages for Certain
Subjects (such as the POTUS)

HOWE PAGE TODAY'S PAPER VIDEO MOST POPULAR TIMES TOPICS THE New York Etimes	litics	Search All NYTimes.com
Wednesday, February 26, 2014 WORLD U.S. N.Y. / REGION BUSINESS TECHNOLOGY SCIENCE	E HEALTH SPORTS OPINION ARTS	
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		Obesity Ru Fruth and a Prize Emerge From Lies About Obesity Ru Young Chi Plummets
	President Obama's Election Night Speech "Tonight you voted for action, not	Ads by Google
Care Catana Associated Press News about Barack Oburna, including commentary and archival articles	Jone, not ours."	Which Hearing Aid is Bes Expert Advice on All Major Brands.
published in The New York Times. Chronology of Coverage		Free Buyer's Guide PDF Download. www.hearingplanet.com/Buyers-G
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News analysis; Press Obsams has approached 2014 revolution in Uzzinie with clinical detechment aimed at avoiding instability; approach is in attan contrast to Free George W Bank homeocrasy- promoting response to Uzzinie's Oreage Revolution of 2004; while sympathetic to Uzzinie's Oreage Revolution of 2004; when the sympathetic to Uzzinie's providence protostone, Osbam has not make jobil sayrations of democracy the minuting force of his presidency, other processing of the processing of the pro- pertions of the processing of the processing of the pro- pertions.	Barack Obama Navigator A list of resources from around the Web about Barack Obama as selected by researchers and editors of The New York Times.	vo
FEB. 25, 2014	· White House blog	YE
FEB. 24, 2014	Barack Obama Speeches - 2002-	ST POPULAR -MALED SEARCHED L. Bits: Apple's Serious Security Issue: IPhone or IPad Immediately
More than goo leaders of a national network of young immigrants, frustrated that House Republicans say they will not more on simmigration in 2014, have decided to turn their protests on Pres Obama in an effort to pressure him to act unflaterally to stop deportations. NOVE: >	Searchable transcripts of more than 200 speeches. - Barack Obsma - Corgress Votes Database.	Op-Ed Columnist: How to Get a Job s Well: How to Get Fit in a Few Minute Biscuits and Scores Share Tender Sec
EED 24 2014	· Barack Obama on the Issues	Op-Ed Mark Bittman: Rethinking O Dangerous Behaviors Obesity Rate for Young Children Plur Decade
Bill Keller Op-Ed column examines how Pres Obama has lived up to the high expectations that he would reform the breken criminal justice system; contract that so far, the Obama administration has been unimpressive on the Issue; expresses hope that the administration will do more in the remaining years of Obama's presidency. MORE: a Show More	The New Yorker, Aug. 27, 2012	 Op-Ed Contributor: Abolitionist or Ti 8. Op-Ed Columnist: Don't Just Do Serr 9. The Stone: Arguments Against God 10. Researchers Find Brain Trauma Dise Player
Highlights From the Archives	The Atlentic, Merch 2012 "Obama vs. Boehner: Who Killed the Debt Deal?"	
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MANN N THE TWEN SHAPES HASEIN GRAMA 4 Years Later, Scarred but Still Confident by TUTOR BASHER President Chamas is making the case that while peogress is slow, he is taking America to a better place — and	Politico 44, A Living Diary of the Obama Presidency Politico.com V Barack Obama Watch Chicago Tribune b	With some selfies, the u
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Hard Talk Aside, Little Desire by the West to Leave Afghanistan 19. Will Des COOPER While President Dunna and NATO officials have talked of a withdrawal by you'r seed, Western officials were plant souther of the country would full back under Talkian countrol. Factorizer J. 2024. Thomshop		
Despite Rifts, G.O.P. Has Election Edge, Poll Finds by JOAN-HAN MARTIN and REGENT HEE-BREAM TO Though must Americans agree more with Democratic policy positions, the Republican Parry is benefiting from the support of self-described independents. Intervary 27, 2014, Thumday	Times Minute Childhood Obesity Drops Also on the Minute, why Clinton is a carroign at talk and a push to	
To Pay for Infrastructure Renairs, Ohama Seeks	a campaign supple and a push to ban plastic bags in California.	
Tax Changes By MIGSAEL D BERM and COMA, DANSHOCKT President Chanas will ask Congress to overhand corporate and basiness tuses to pay for a Soury-peer, 8900 Billion transportation bill. Fefranty 27, 2594, Thundoy Why the LR.S. Scandal Won't Go	No.	
Away by Hoddas B EDSALL The endless Congressional investigations serve a crucial purpose for Republican politicians, strategists and fundasisers. February 26, 2054, Washansing	Obama Announces New Manufacturing Hubs The president said two new manufacturing institutes would be located in Chicago and Detroit in	
Petrary 28, 2014, Weshwatey Ex-President Ventures Where Some Might Not By JOANTHAN MARTIN When red-state Democratis need a popular national	manutacturing institutes would be located in Chicago and Detroit in an effort to create high-quality jobs.	
the man they call. February 26, 2014, Wednesday	C Outside	
Don't Just Do Something. Sit There. by PicAssk 1: FriedMay. Is the Cold War back? Actually, today's geopolitics are so much more interesting. February 28, 2914. Weshwoody	© Video Bobby Jindal After Meeting	
Trust Eroded, Obama Looks Beyond Karzai By MARK LANDLER and HELENE COOPER President Obama is apparently resigned to dealing with	With Obama The Louisiana governor accused the president of "waving the white flag" on the American economy.	
Trust Eroded, Obama Looks Beyond Karzai 19, MORLOWER as HERBER COOPER President Chema is apparently resigned to dealing with the next Afgins president on two withstrawls and trusting. The Proposition Humid Ramil has reload to the state of the Company of the Com	9 8	
With Syria, Diplomacy Needs Force by MCHAIL REMEIFF Assad won't negotiate a cease-fire without military pressure.	Cir Victor	
White House Meeting Turns Into a Lightning Round for Obama and Bochner By MOWAN D. 08-57. Freedom: Obama and Speaker John A. Boehner met to discusse a long list of issees, and alides to both mar called the new northig constructive, but offered no evidence that gridlock called the new northig constructive, but offered no evidence that gridlock	Obama Delivers Remarks to Governors President Obama speaks to members of the National Governors Association in the White House State Dining Room.	
February 26, 2014, Wednesday	House State Dining Room. More Multimedia >	
Why Most Small-Business Owners Will See Premiums Rise Under A.C.A. by Roces Moderation But how rignificant will those increases be? Felcant 8.6. 507. Bessley		
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Standard & Peor's is seeking information about certain meetings between President Obama and Timothy F. Grithner in 2011, hoping the details will help show that a lawsuit filed by the government in 2013 against the company was done in retaliation for a rating a downwards of American debt.		
A Magazine Cover for a Famously Humble Ambassador by Aller Work The Company of th		
In an interview with the Chinese edition of Men's Health, Gary Locke, the departing United States ambassedor to China, said he could hold a plank position for 51 minutes. February 25, 2904, Woodoy		
China: Beijing Rejects U.S. Move to Foster Tibet Talks by MULTER ty MULT ty MULTER ty MULTER ty MULTER ty MULTER ty MULTER ty MULT ty MULTER ty MULT		
Wary Stance From Obama on Ukraine		
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Obama to Propose Another Raise for Federal Workers by THE ASSOCIATED PRESS The White House said President Obama would propose a 1 percent puy raise next year for Sederal workers. Forcest 28, 2014, Tuesday		
February 25, 2044, Tuenday Syria War Stirs New U.S. Debate on Cyberattacks 19, 0040 is. & Associate Considerations that field President Obama to hesitate about using tyberveopros against dyria reflect larger concerns about a new and undested tacks. February 23, 2044, Tuenday		
After Meeting With Ohama Governor Coar on the		
Attack by MON-MED. D. SHEAR Emerging from the annual meeting of the nation's governors at the White House, Gov. Bobby Jindal omitted the usual happy-talk to discuss his views of President Ohenna. February 25, 2014, Tuenday		
Pentlagon Plans to Shrink Army to Pre-World War II Level Driess Serenzy Chark Hagel's budget proposal world eliminate an entire class of Air Force attack, jets and scale look the sin of the Army neight to pre-s/st levels, but to the force's site in 1940.		
A Second Front in the Privacy Wars		
by THE EDITIONAL BLAKE. The Oburns of the Charles of the Committee to protecting consumer data. February 24, 2544, Monday Locked Away in Immigration Jails		
Locking detainees up indefinitely is not a path to a more rational immigration system.		
Crime and Punishment and Obama by 811,181112. Where's the community organizes when we need him? Petruny 24, 2014, Meeding		
Young Immigrants Turn Focus to President in Struggle Over Deportation BranklarRESTOR After months of ralles brought no movement in the		
After months of rallies brought no movement in the House on immigration, a national network of young Immigrants has decided to turn its protests on President Obama. February 24, 2014, Mention		
Can California Avoid a 'Shock to Trance' Approach to Water Police? By ANDREW C. BEJOSE Can California battle inertia and pressure from its agriculture tolicity and become water resilient?'		
February 23, 2014, Sunday		
Obdata to Propose Smitt in Wilding Funding 9 COMA COMPROSE 19 COMPROSE COMPROSE 10 COMPROS		
What the Stimulus Accomplished by the ESCOUGL BOAGD Through ridicaled by Republicans, the 2009 Recovery Act served the American economy. February 23, 2574, Serviny		
Amid Fence-Mending, Another U.S		
by SCHER BORDER The political crisis in Ultraine has underscored the difficulties of rostoring constructive ties between Weakington and Monoson, Verturary 22, 2544, Statutory U.S. Proposes Cuts to Rates in Medicare Payments By ROBERT PEAR		
An Obama administration peoposal to reduce Medicare payment rates for managed care plans was met with resistance by Republicans, who said berneficiaries would suffer. February 22, 2014, Salarday		
An End to the Grand-Bargain Charades by THE EXCOMM. BOMO President Chama is planning for a 2015 budget based on the country's needs, not on impossible Republican demands. February 22. 2944. Standay		
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Chronology of Coverage

FEB. 26, 2014

Pres Obama tells Afghan Pres Hamid Karzai that he has instructed the Pentagon to begin planning for a complete withdrawal of American troops from Afghanistan by the end of 2014; Obama also says the United States is still open to leaving a limited military force in the country, message aimed less at Karzai than at whoever will replace him. MORE »

FEB. 25, 2014

News analysis; Pres Obama has approached 2014 revolution in Ukraine with clinical detachment aimed at avoiding instability; approach is in stark contrast to Pres George W Bush's democracy-promoting response to Ukraine's Orange Revolution of 2004; while sympathetic to Ukraine's pro-Western protestors, Obama has not made global aspirations of democracy the animating force of his presidency. MORE »

FEB. 25, 2014

Louisiana Gov Bobby Jindal's critical comments about Pres Obama in a news conference just after annual meeting of nation's governors at the White House prompts immediate partisan arguing among dozen or so governors assembled just steps from the Oval Office. MORE »

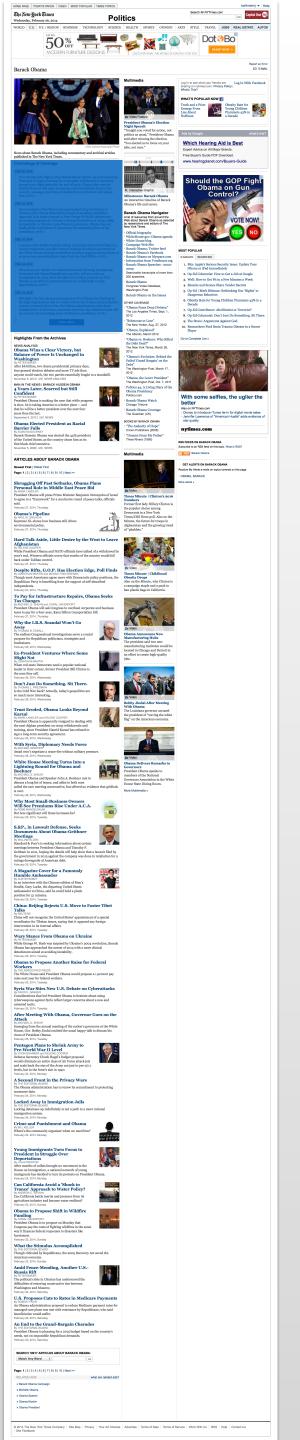
FEB. 24, 2014

More than 500 leaders of a national network of young immigrants, frustrated that House Republicans say they will not move on immigration in 2014, have decided to turn their protests on Pres Obama in an effort to pressure him to act unilaterally to stop deportations. MORE »

FEB. 24, 2014

Bill Keller Op-Ed column examines how Pres Obama has lived up to the high expectations that he would reform the broken criminal justice system; contends that so far, the Obama administration has been unimpressive on the issue; expresses hope that the administration will do more in the remaining years of Obama's presidency. MORE »

Show More



Chronology

Most Recent News Articles

Highlights From the Archives

NEWS ANALYSIS

Obama Wins a Clear Victory, but Balance of Power Is Unchanged in Washington

By PETER BAKER

After \$6 billion, two dozen presidential primary days, four general election debates and more TV ads than anyone could watch, the two parties essentially fought to a standstill.

November 8, 2012 | US | NEWS ANALYSIS



By PETER BAKER

President Obama is making the case that while progress is slow, he is taking America to a better place — and that he will be a better president over the next four years than the last.



Obama Elected President as Racial Barrier Falls

By ADAM NAGOURNEY

Barack Hussein Obama was elected the 44th president of the United States, as the country chose him as its first black chief executive.

November 5, 2008 | US | NEWS



ARTICLES ABOUT BARACK OBAMA

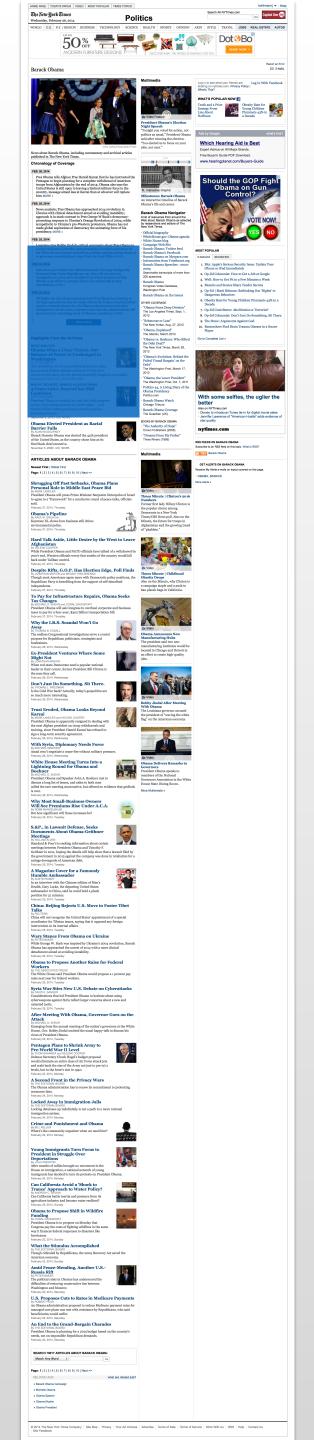
Newest First | Oldest First

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Shrugging Off Past Setbacks, Obama Plans Personal Role in Middle East Peace Bid

BV MARK LANDLE

President Obama will press Prime Minister Benjamin Netanyahu of Israel to agree to a "framework" for a conclusive round of peace talks, officials



Highlights

Abbreviated Historical Context

ARTICLES ABOUT BARACK OBAMA

Newest First | Oldest First

Page: 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Next >>

Shrugging Off Past Setbacks, Obama Plans **Personal Role in Middle East Peace Bid**

President Obama will press Prime Minister Benjamin Netanyahu of Israel to agree to a "framework" for a conclusive round of peace talks, officials said.

February 27, 2014, Thursday

Obama's Pipeline

By RAÚL M. GRIJALVA

Keystone XL shows how business still drives environmental policy.

February 27, 2014, Thursday



Hard Talk Aside, Little Desire by the West to Leave **Afghanistan**

By HELENE COOPER

While President Obama and NATO officials have talked of a withdrawal by year's end, Western officials worry that swaths of the country would fall back under Taliban control.

February 27, 2014, Thursday

Despite Rifts, G.O.P. Has Election Edge, Poll Finds By JONATHAN MARTIN and MEGAN THEE-BRENAN

Though most Americans agree more with Democratic policy positions, the Republican Party is benefiting from the support of self-described independents.

February 27, 2014, Thursday

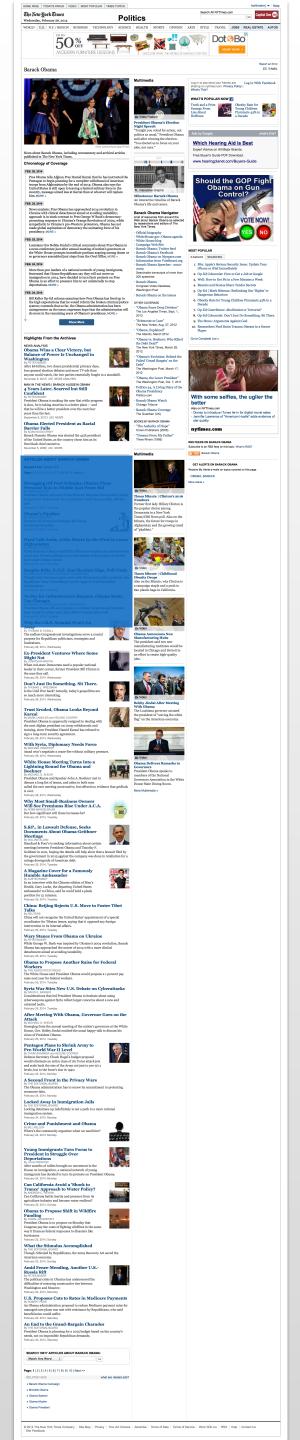
To Pay for Infrastructure Repairs, Obama Seeks **Tax Changes**

By MICHAEL D. SHEAR and CORAL DAVENPORT

President Obama will ask Congress to overhaul corporate and business taxes to pay for a four-year, \$302 billion transportation bill.

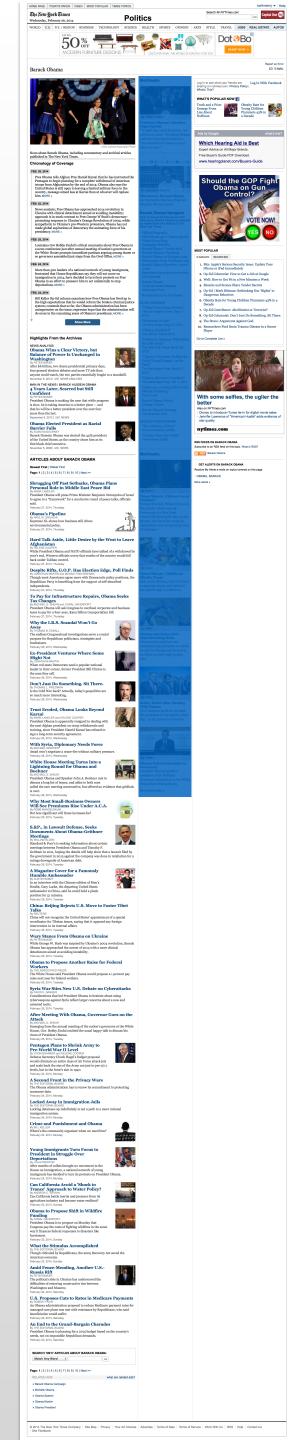
February 27, 2014, Thursday

Why the I D S Seendal Won't Co



Articles

A (Paginated) Firehose, Starting with Most Recent Articles (Again)



Multimedia

Milestones (Timeline)

Other Coverage

Books by Subject

0

Currently

The NYT Provides Aggregate
News Pages for Certain Subjects
(such as the POTUS)

...Later

A Dynamic Timeline for News Articles With Interactive Exploration and Linking of Related Subjects' Timelines NOV 2008

FEB 2014

Bounded by starting node or date

Approximately concurrent.

events

Again, what does position
mean here? Might need to
do API tests
to see what data can
be encoded vertically.

NOV 2008

A timeline, with start end point labels

(Rects are a bit big here)
Though: they might be .

tap-sized now?

FEE

MULTIPLE STORIES AGGREGATED CHRONOLOGICALLY

> AGGREGATE TITLE

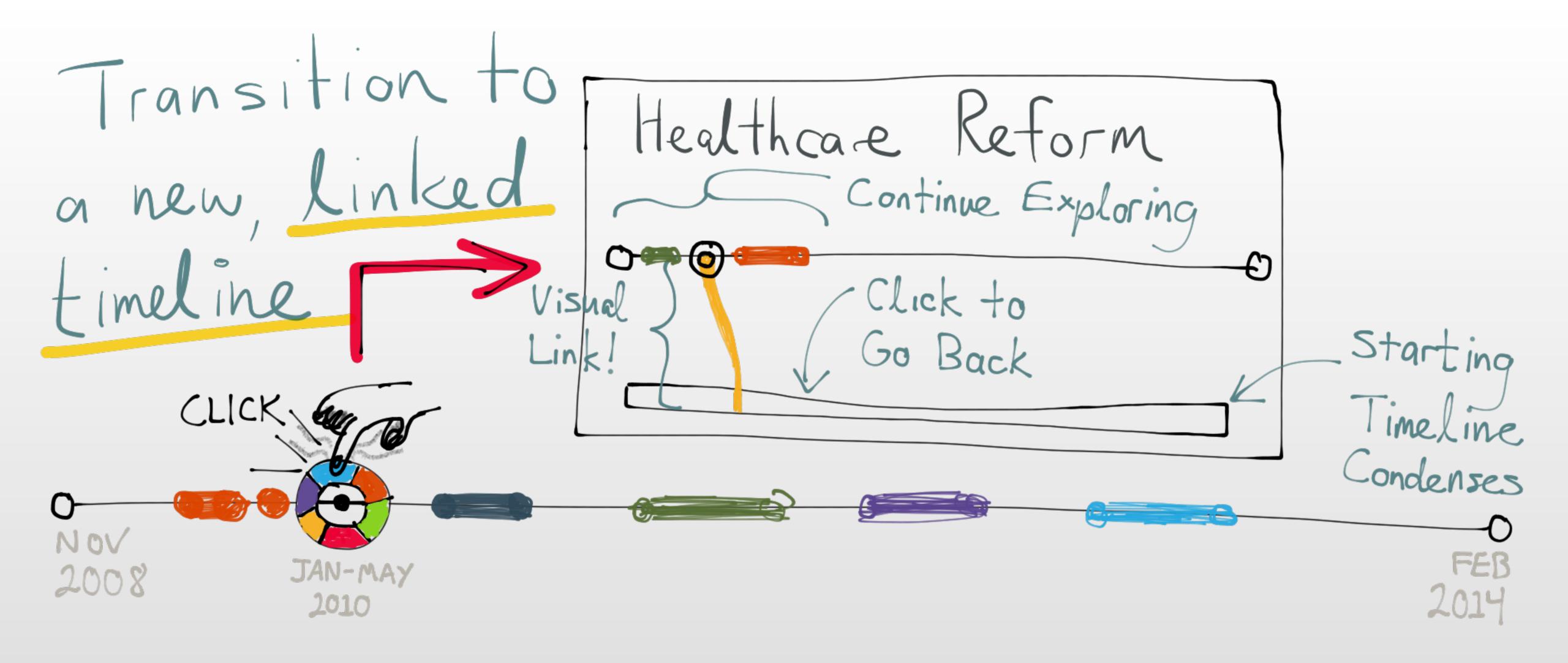


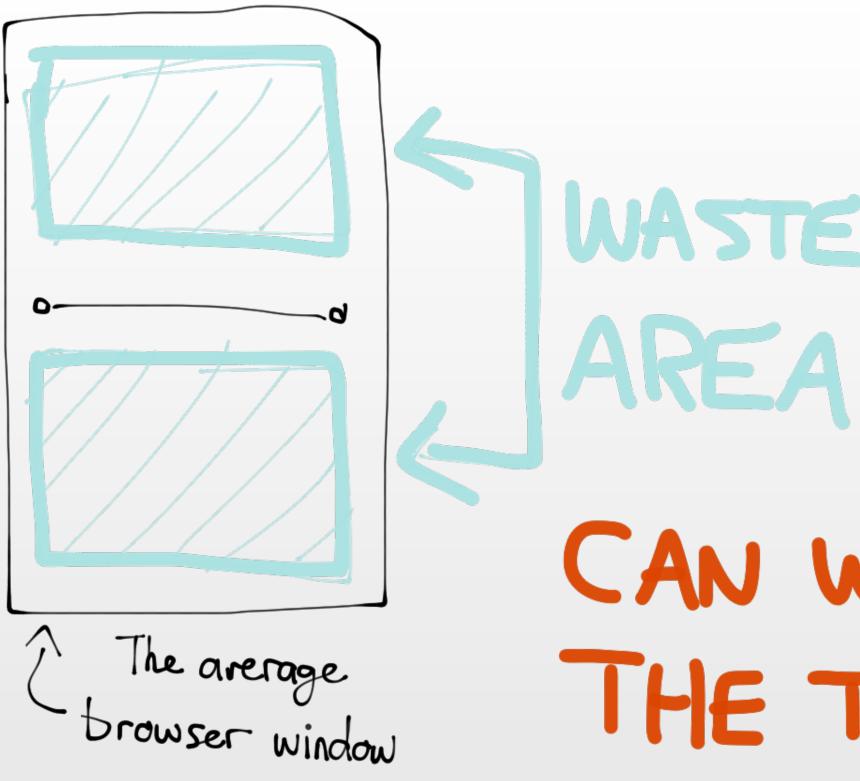
2010

NOV 2008 Aggregate titles appear on honer or something?

GROUPING THRESHOLD (we'll see)

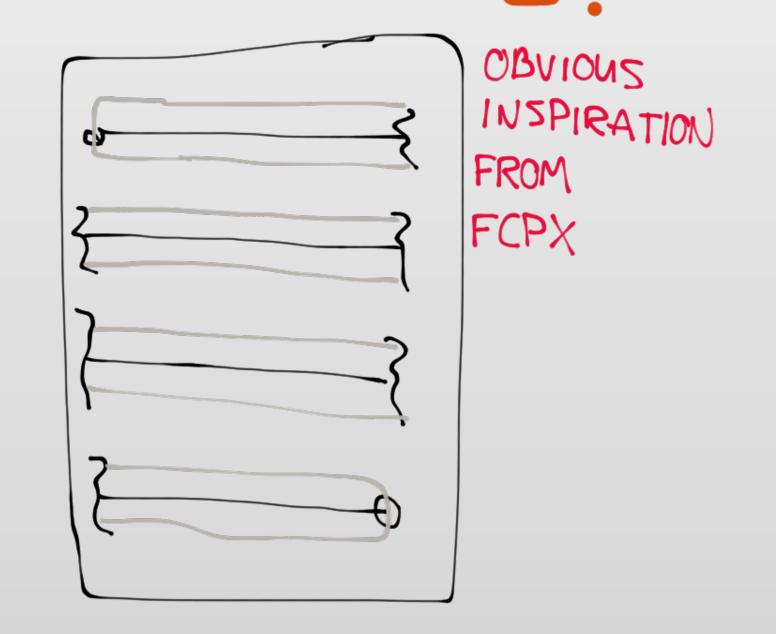
POTENTIALLY





WASTED

CAN WE WRAP? THE TIMELINE?



Details on Demand

Efficient Use of Area

Lenses

Linked Displays

Narrative Visualization

Summarization

ThemeRiver Havre et al, 2000

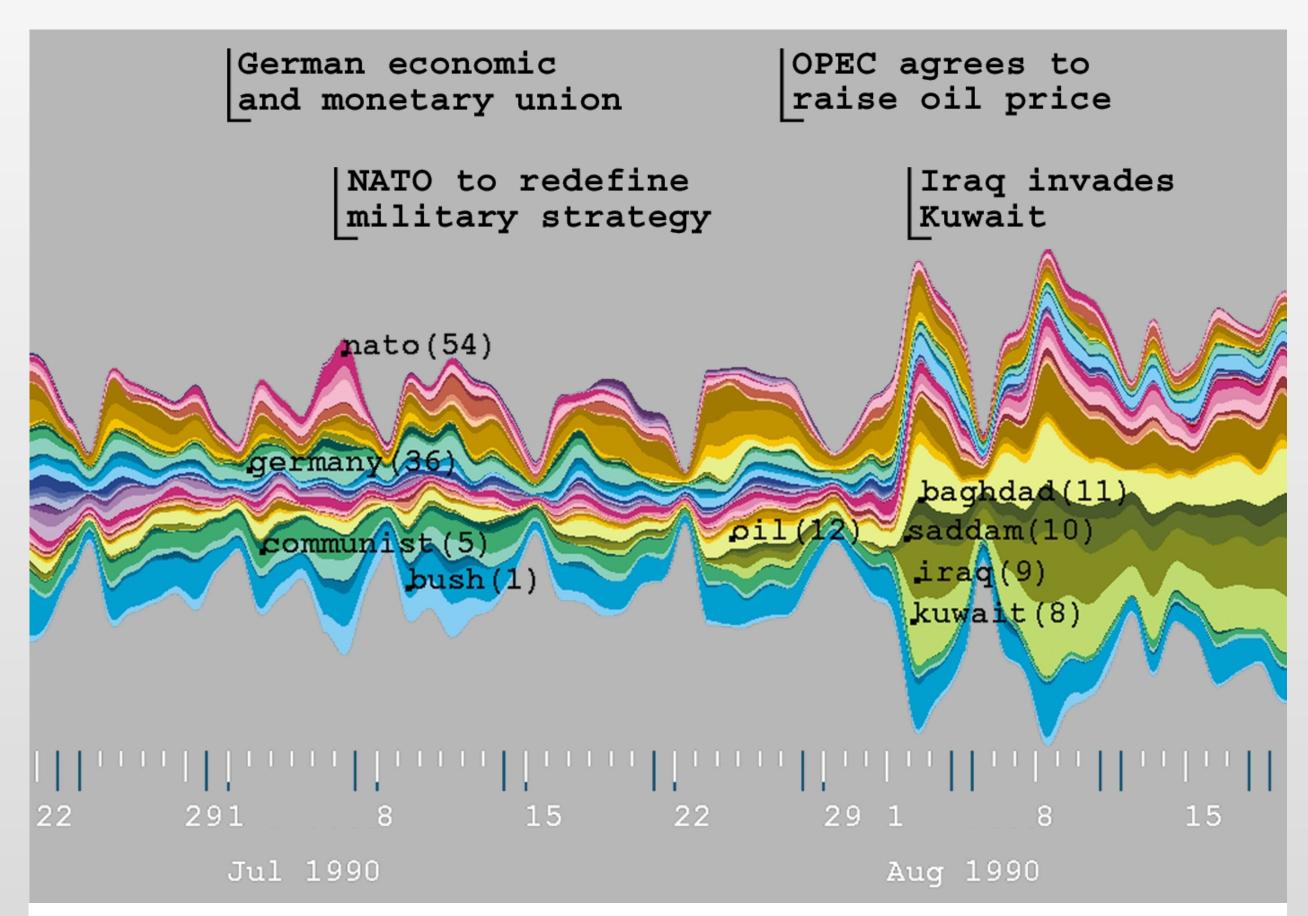


Figure 3: AP data from July - August 1990. A wide current in the river indicates heavy use of a topic, while changes in color distribution correlate to changes in themes.

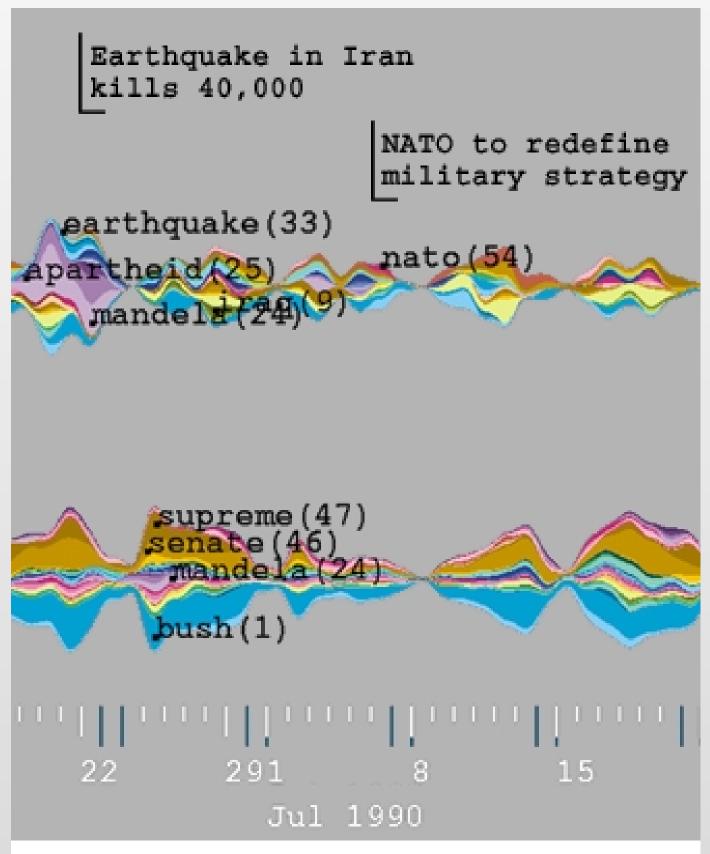
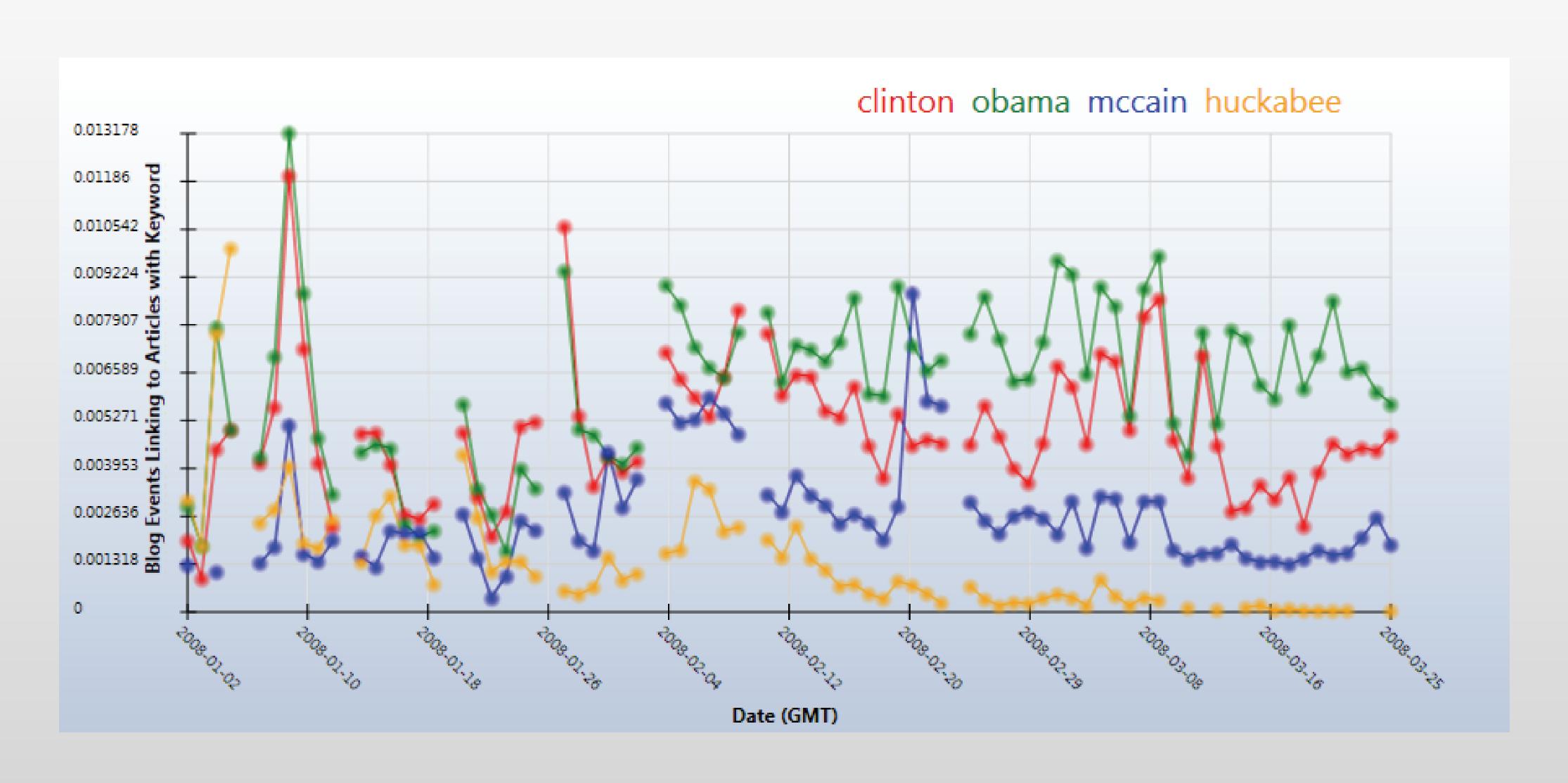


Figure 6: Parallel rivers let users compare AP data from Washington, D.C. and New York from the same time period.

Narratives Fisher et al, 2008



Front Row to Fashion Week

By MIKE BOSTOCK, SHAN CARTER, ERIK HINTON, CATHY HORYN and ERIC WILSON | September 12, 2013

Of the more than 300 collections shown during New York Fashion Week, here were the ones that created the most buzz and left the biggest impressions on fashion editors as they headed off to the next round of shows in London, Milan and Paris.

View Full Screen

Calvin Klein

A beautiful, innovative collection in which Francisco Costa layered references to urban tribes, '80s art, handcraft and even, seemingly, radical chicks of the 1920s. It added up to a modern expression of fashion.

Read more: Calvin Klein in Full Color



Sand-colored, orange-accented canvas wrapped into a dress and suit

A large emerald tweed coat with frayed, pronounced seams

A boxy black jacket fringed with multicolored confetti strings

Project Plan

- 3/04 Prepare Initial Data Set
 Working demonstration of project
- 3/06 Finish View Experiments
 Figure out if we can use the live NYT APIs (or not)
- 3/11 Finalize Overall Interaction Design
 Have a full plan for user interactions and events
- 3/13 Final Project Poster Presentation
 Working demonstration of project
- 3/20 Final Project Paper and Software Due

 Finish the paper, write documentation, and get the final code on GitHub

Questions & Feedback

Michael Beswetherick & Joe Kohlmann

Visualization on Cosmological Halo Merger Trees

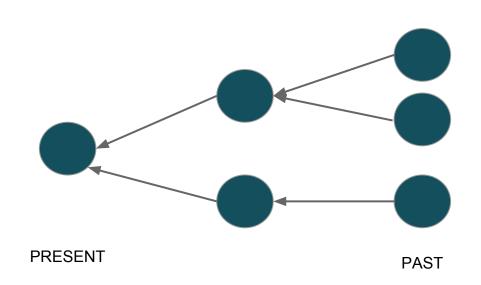
Laurel Orr and Jennifer Ortiz
CSE 512

Halo Merger Trees

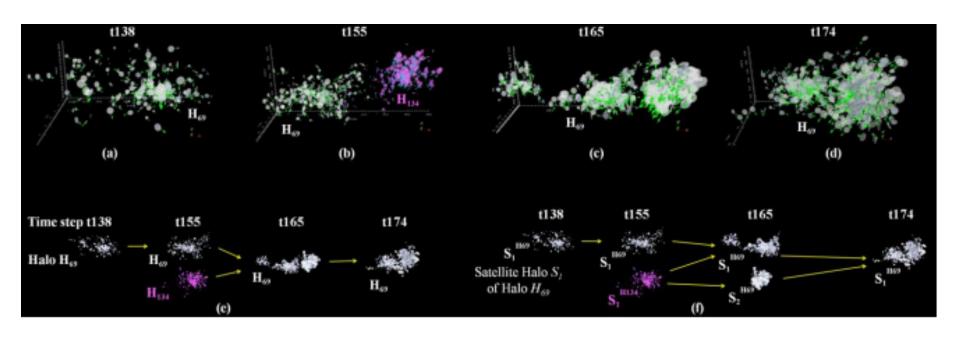
Halo: dense clumps of particles that interact and merge

Merger Tree: shows the history of joining (merging) and splitting of halos over time

Scientists want to compare and analyze structures of different trees



Previous Work

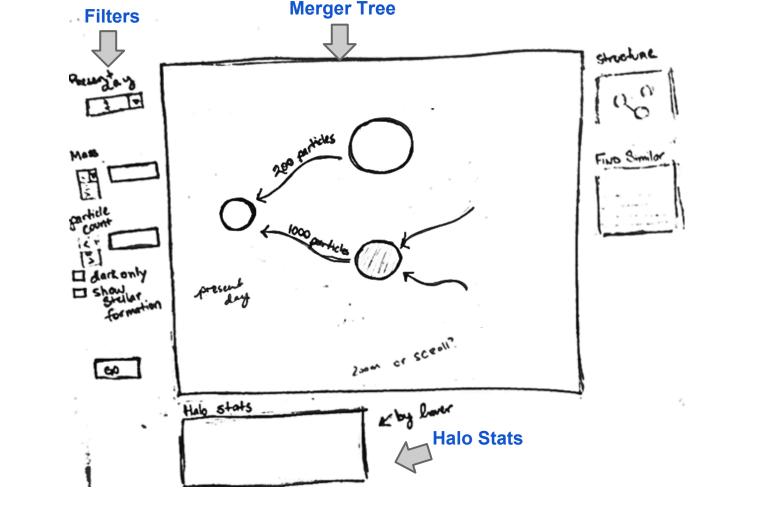


Takle, J.; Silver, D.; Heitmann, K., "A case study: Tracking and visualizing the evolution of dark matter halos and groups of satellite halos in cosmology simulations," Visual Analytics Science and Technology (VAST), 2012 IEEE Conference on, pp.243,244, 14-19 Oct. 2012.

Our Task

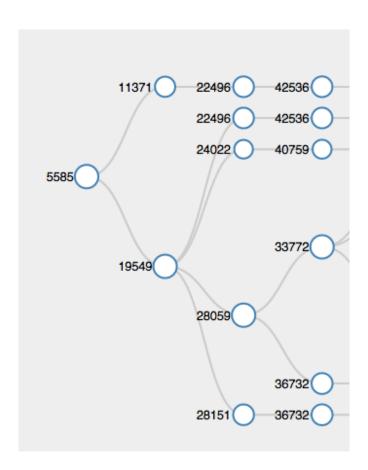
320,589 halos with 286 present day roots across 27 timesteps Create interactive visualization for astronomers to view and analyze halos

- Zooming
- Comparison between merger trees
- Path tracing of important halos
- Filtering
- Node/Path Annotations



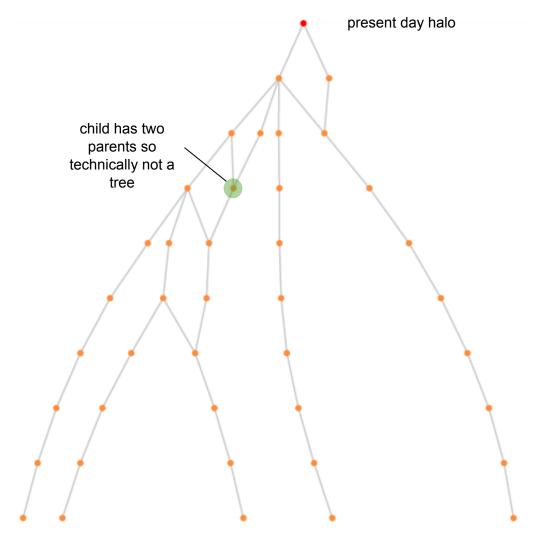
comparing Two Halos Halo 87 Halo 25 Present Subgraphs with Same Structure

Collapsable Tree



Force-Directed Graph

Using D3's force directed layout with constraints to make it look like a tree



Help!

- How do we show a global view of a tree while allowing for zooming? How can we summarize the graph?
- Should the users be allowed to move the nodes?
- How can we allow for tree comparison?

(Presented by Laurel Orr, Jennifer Ortiz)

Voronoi Treemaps in D3

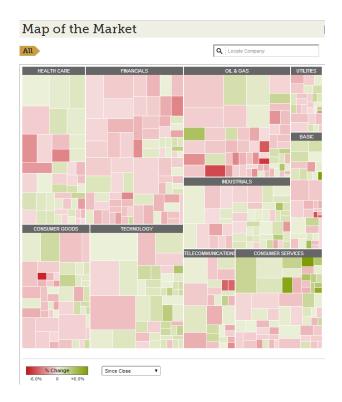
Paul Vines

Peter Henry

Treemaps

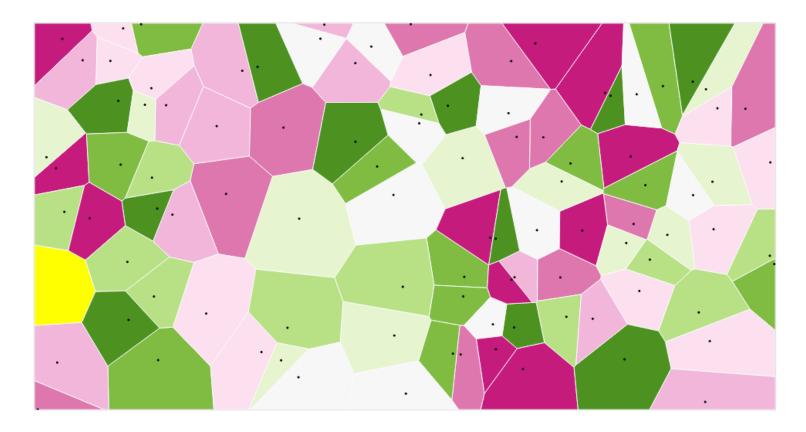
- Tree-maps: A space-filling approach to the visualization of hierarchical information structures. Johnson and Shneiderman, IEEE Vis 1991.
- Squarified Treemaps. Bruls et al., Data Visualization 2000.
- Already available in D3
- Real-time, interactive





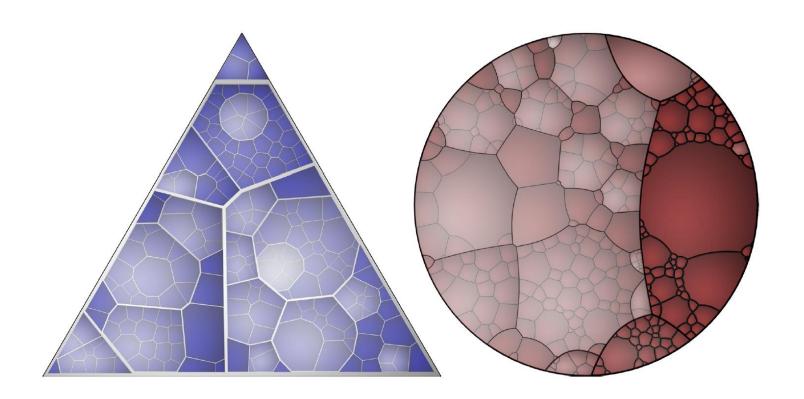
Voronoi Diagrams

- Partition plane based on closest point
- Available in D3



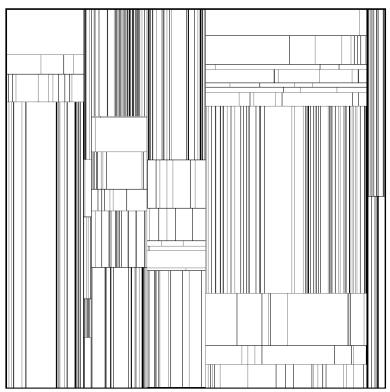
Voronoi Treemaps

• *Voronoi Treemaps.* Balzer and Deussen, InfoVis 2005.

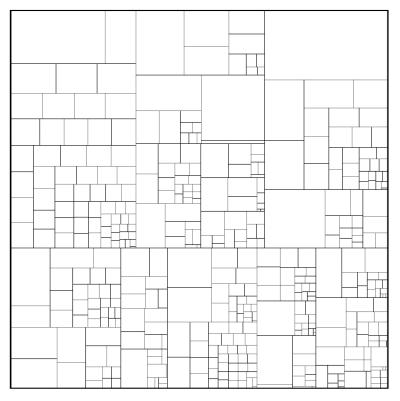


Voronoi Treemap Advantages

Original treemap:
Unbalanced aspect ratios



Squarified treemap: Obscure heirarchy



Voronoi Treemaps Are Slow (Even on an 8 core Xeon 2.4GHz)

~7 minutes:

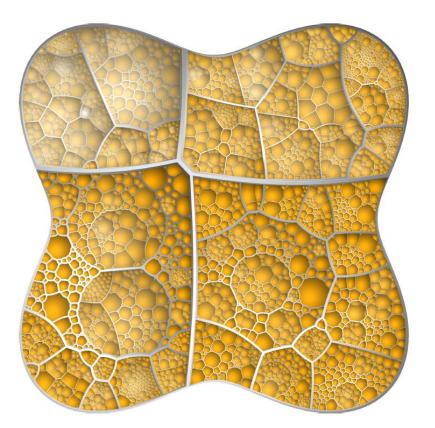


Figure 10: Enhanced AW Voronoi Treemap layout of 4075 nodes at 10 hierarchy levels (a brighter color indicates a lower hierarchy level)

~6 minutes:

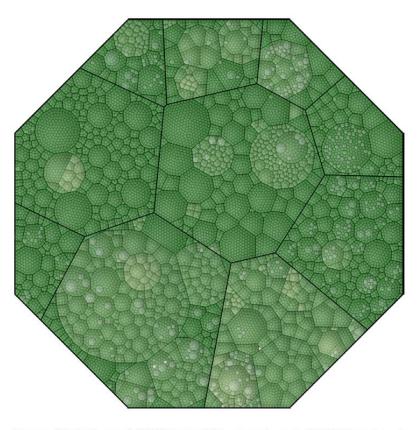


Figure 11: Enhanced PW Voronoi Treemap layout of 16288 nodes at 7 hierarchy levels (a brighter color indicates a lower hierarchy level)

Tasks

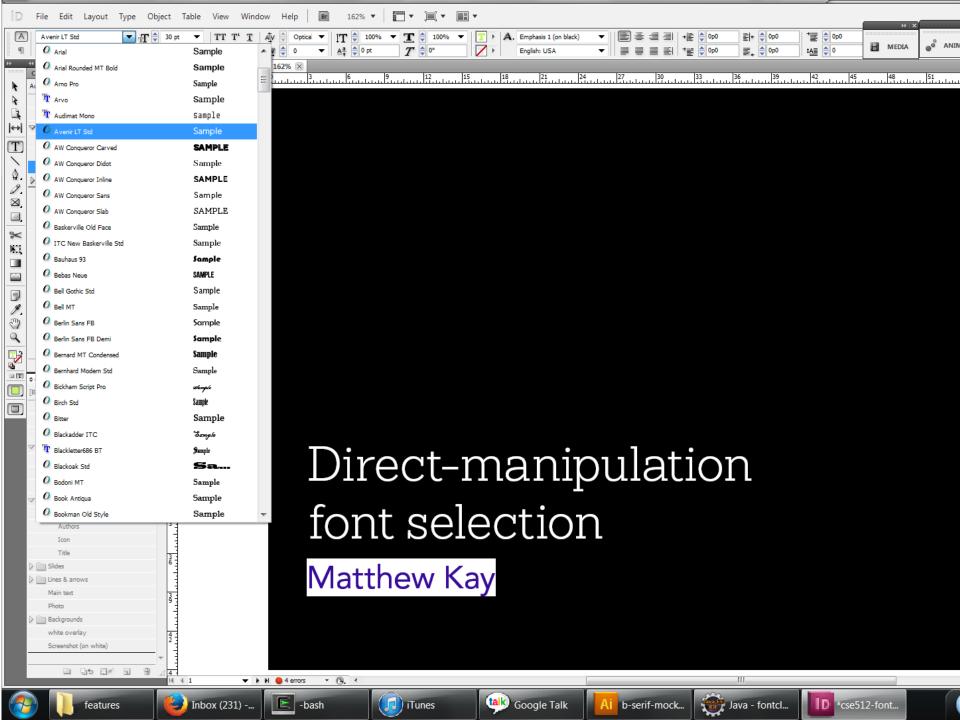
- Literature for faster options (done)
 - Fast Dynamic Voronoi Treemaps. Sud et al., 2010.
 - GPU-based, ~50x speedup
 - Computing Voronoi Treemaps: Faster, Simpler, and Resolution-independent. Nocaj and Brandes, 2012.
 - CPU-based, core algorithm changes, beats above GPU solution
- Implement original core algorithm in D3
- Investigate Optimizations
 - Most promising is Nocaj and Brandes because it is CPUbased.

Questions

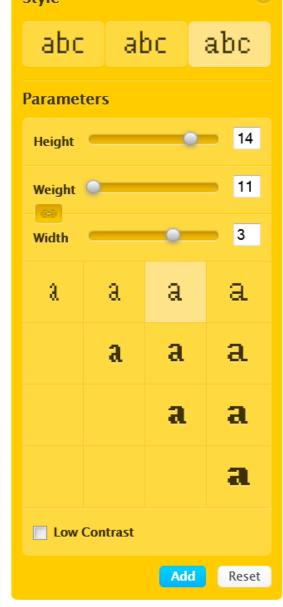
- How can we parallelize our tasks?
 - This project is somewhat serial in nature
- How can we parallelize our algorithm (LOL)?
 - Is WebGL or WebCL a good idea?
- Good ideas for optimization?
 - Plot only the first *n* levels of the dataset
 - Plot first few levels as a standard treemap, then the remainder as a Voronoi Treemap
- What are some good available sample datasets?
- What interactivity can/should we support?

Direct-manipulation font selection

Matthew Kay

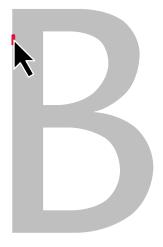


Elementar a parametric type family



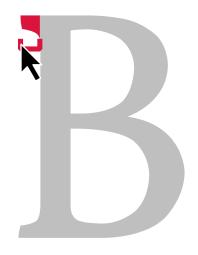
How about parametric, direct manipulation selection of existing fonts?

Stone Sans Humanist sans-serif



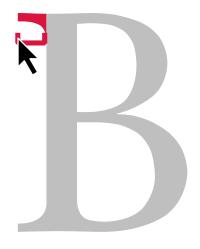
Stone Sans Humanist sans-serif

Angie Sans Humanist semi-serif

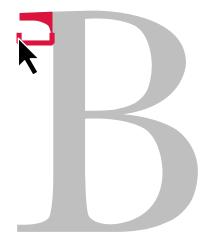


Vollkorn Serif

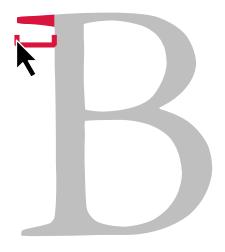
Apolline Old-style serif



Sabon Old-style serif

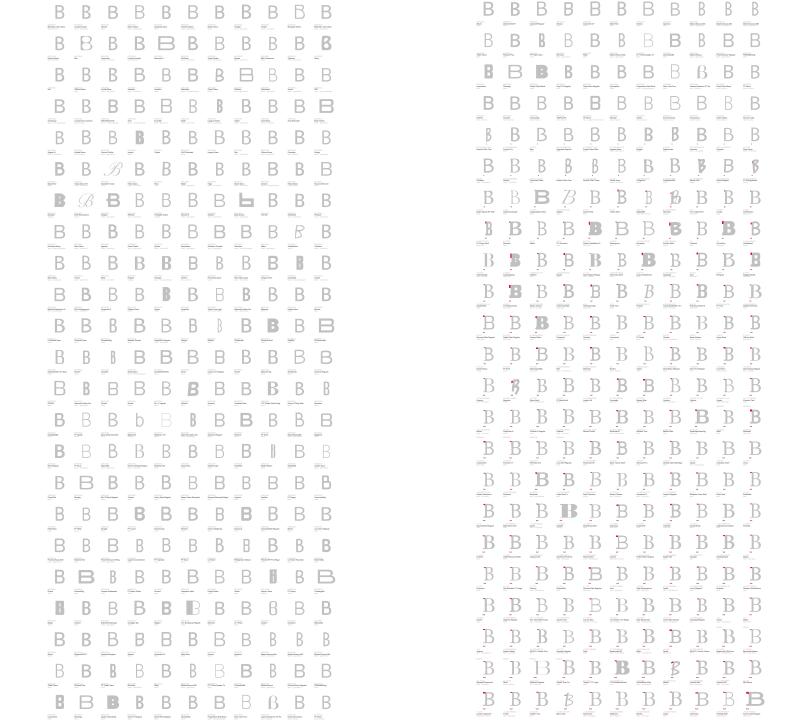


Baskerville Transitional serif



Garamond Old-style serif

Garamond Old-style serif



12.24375 Times New Roman 12.4 Melior 12.24375 12.4 175 Regul New Baskerville ArchetypeRegular Times serif - transitional serif - transitional serif serif - transitional slab-serif MODE MODE 12.9814691148 13.025 Serifa 13.1209149872 IM FELL French Canon 13.18125 13.18125 ΜT Baskerville Old Face Bernhard Modern Miller serif - old-style serif - transitional slab-serif serif serif - transitional 13.925849139 14.275 Mrs Eaves 13.80625 14.1090691866 14.1092809957 417 Lexicon No1 SchoolBook Web Mistral Lexicon No2 onoblack serif - transitional serif - old-style serif - old-style

15.525

Clarendon

15.8305820821

Prestige Elite

serif (mono)

15.3559982836

serif - old-style

Bembo

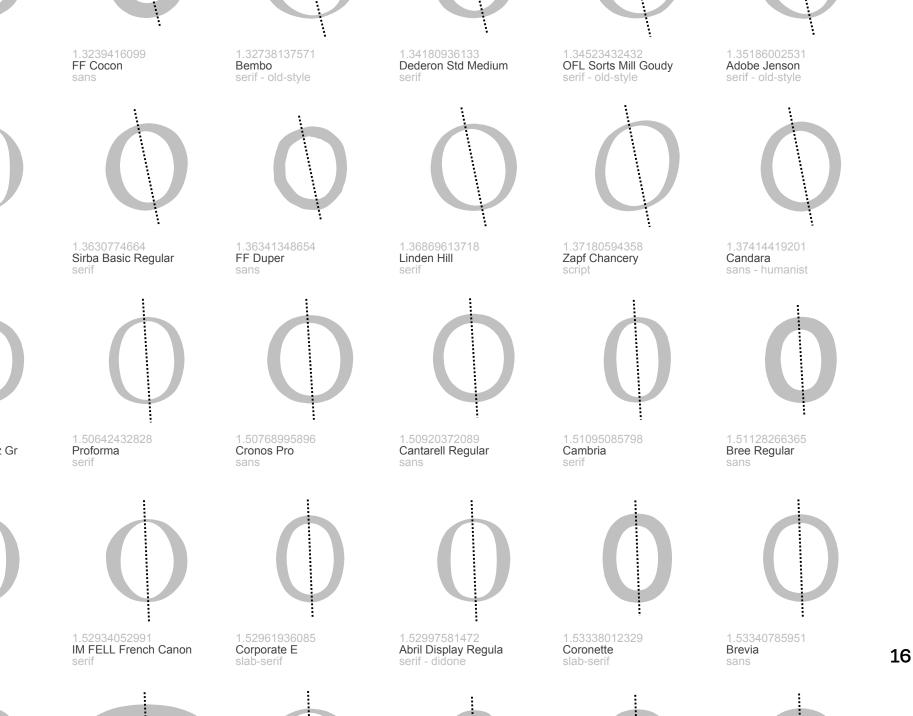
15.4962875832

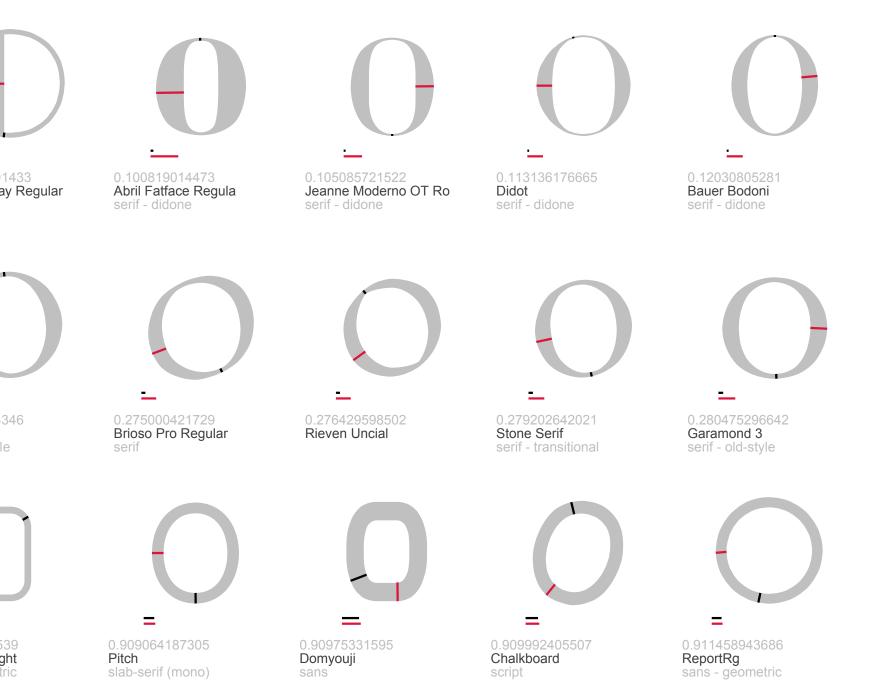
Cardo

15

15.975797439 Aviano Slab Regular

slab-serif







Thanks! Discussion—

Preventing jitter — optimal path through this space?

Handling multiple constraints?

Feature selection?

Narrative Visualization

A story is worth thousand pictures.

Christine(Yenting) Liu, Nina(Zhuxiaona) Wei

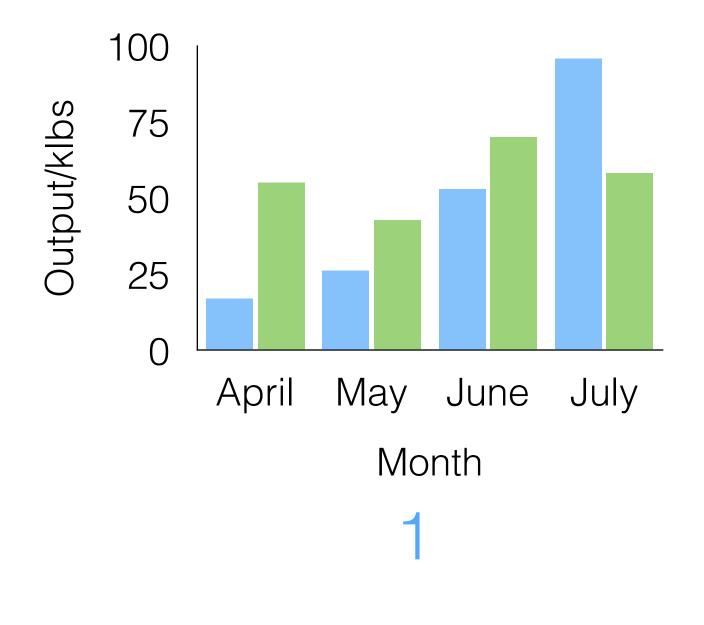
Question

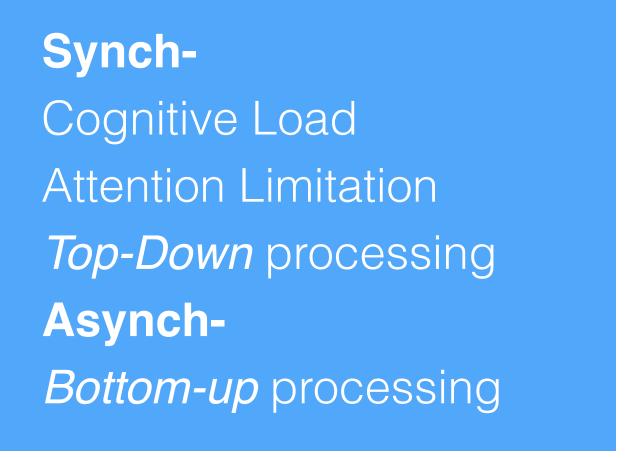
Which is the more effective way to present statistical data graphics, synchronously or asynchronously?

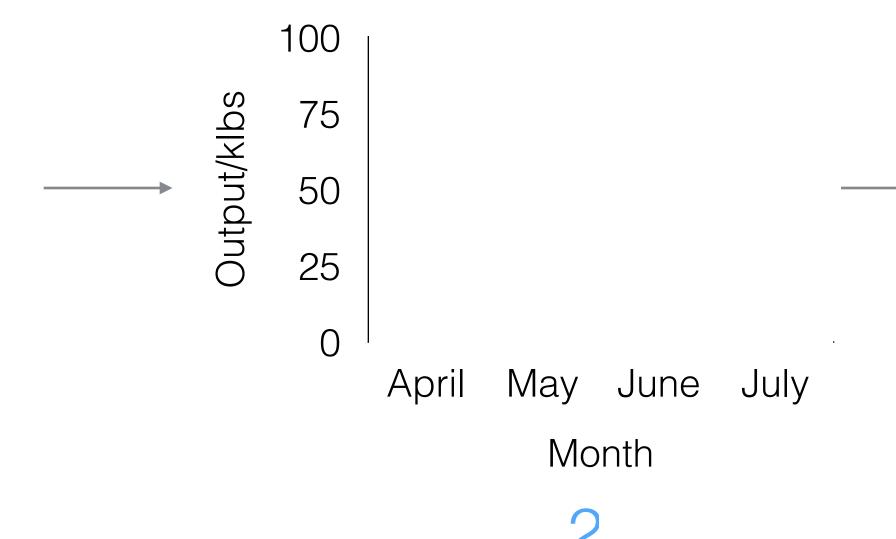
Question

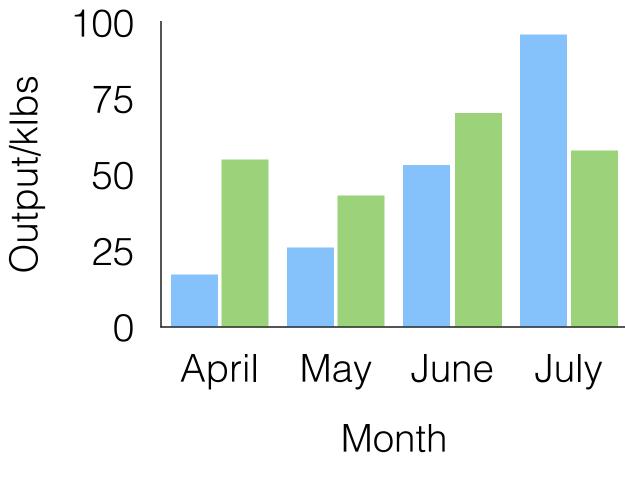
Synchronous

Asynchronous









1

Month

April

May June July

3

Related-work

The role of Storytelling in visualization, and the importance of narrative visualization.

Gershon & Page, 2001; Wojtkowski & Wojtkowski, 2002; Ma et.al, 2012; Kosara & Mackinlay, 2013;

Design category, design space analysis, case study Segel & Heer, 2010;

Visualization rhetoric, framing effects

Hullman & Diakopoulos, 2011

Animation transitions, Sequence of narrative visualization

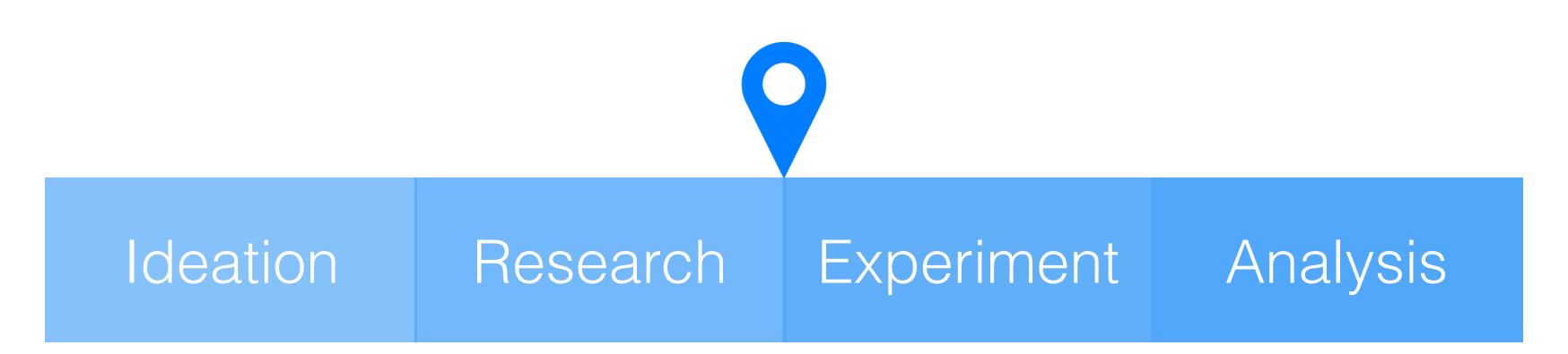
Heer & Robertson, 2007; Hullman et al, 2013

Progress

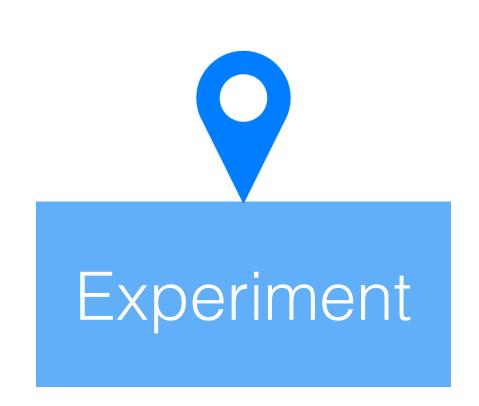
Done: Literature Review

Doing: Experiment Design, Pilot Test

To do: Experiment, Data Analysis, Paper Write-up



Progress



Within-Subjects Design

Independent Variables:

1. Synchronous, Asynchronous

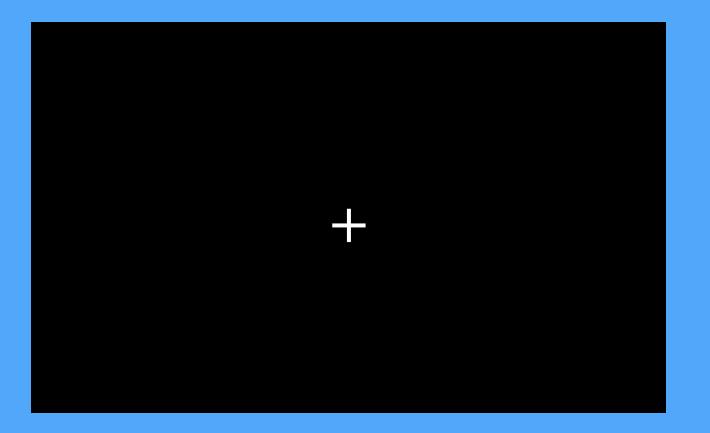
Dependent Variables:

- 1. Accuracy (describe the level of interpretation), objective
- 2. Likert Attitude Scale (based on the Design Criteria), subjective

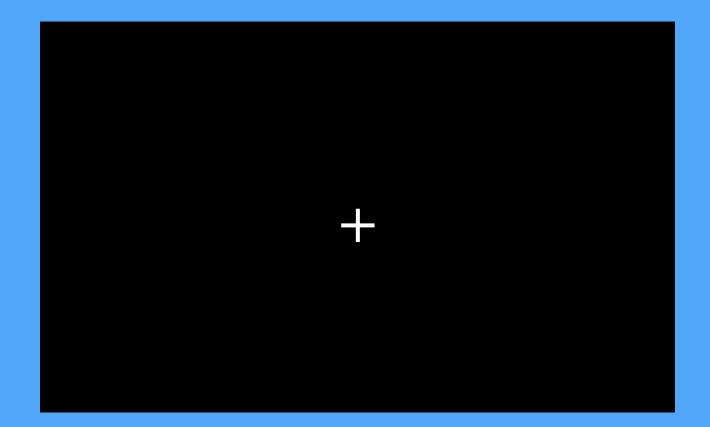
Experiment Stimulus:

Basic Charts (bar) or Typical Narrative Visualization

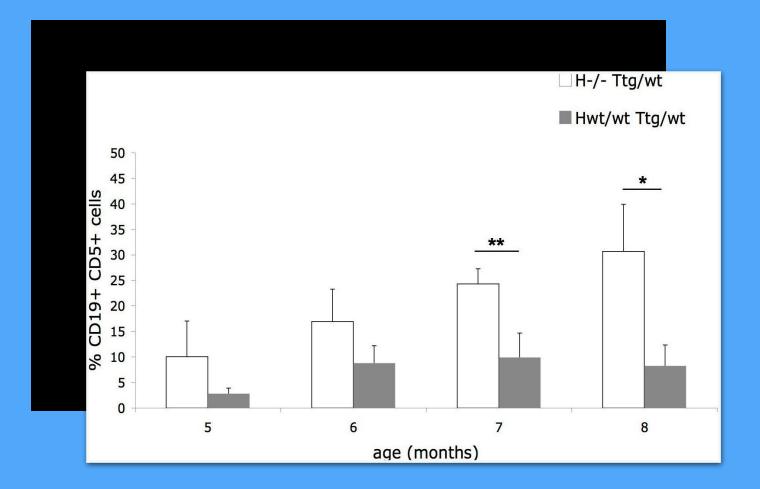




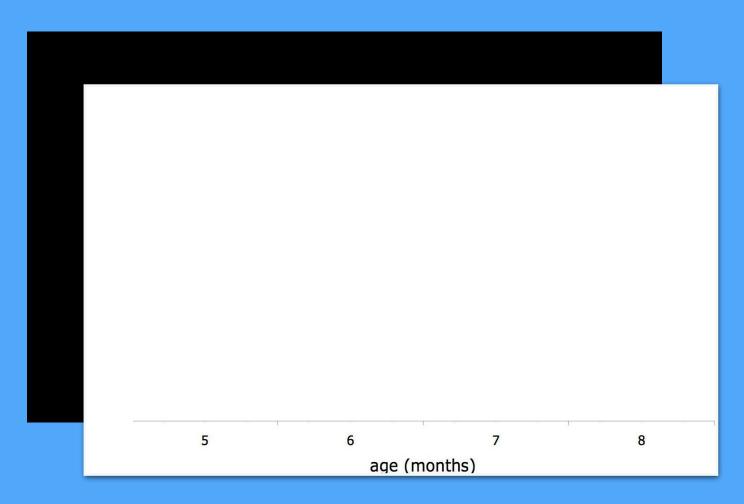
Asynchronous

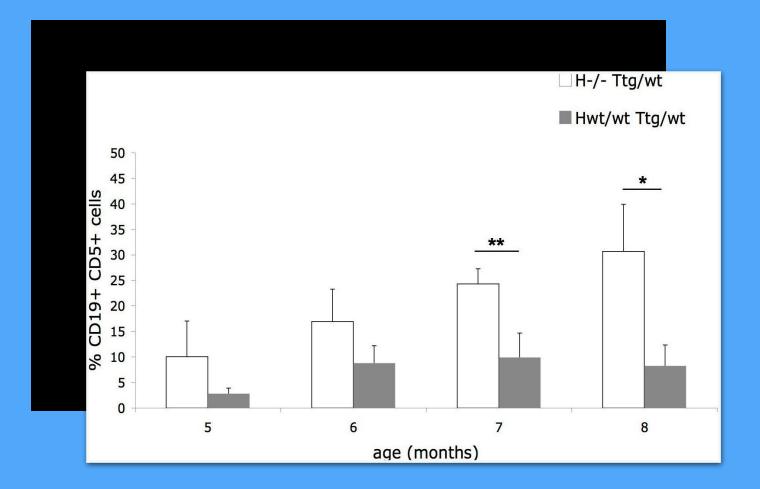


500ms

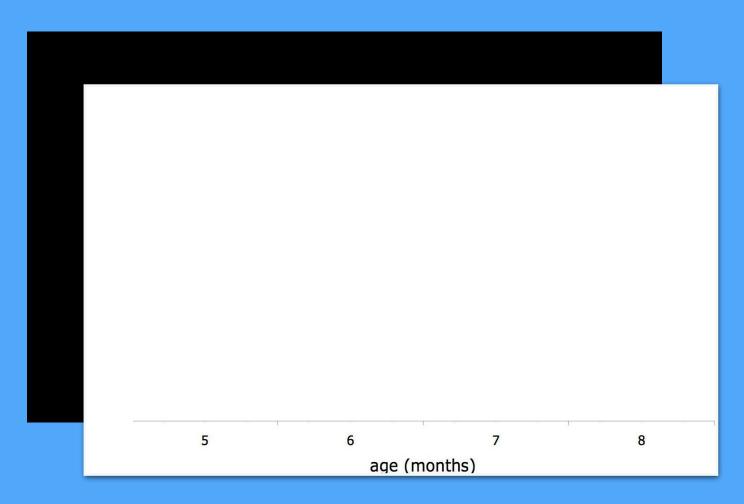


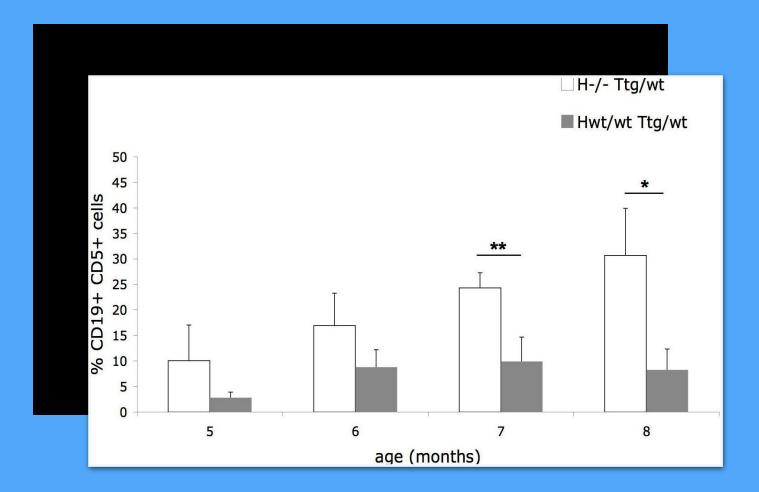
500ms



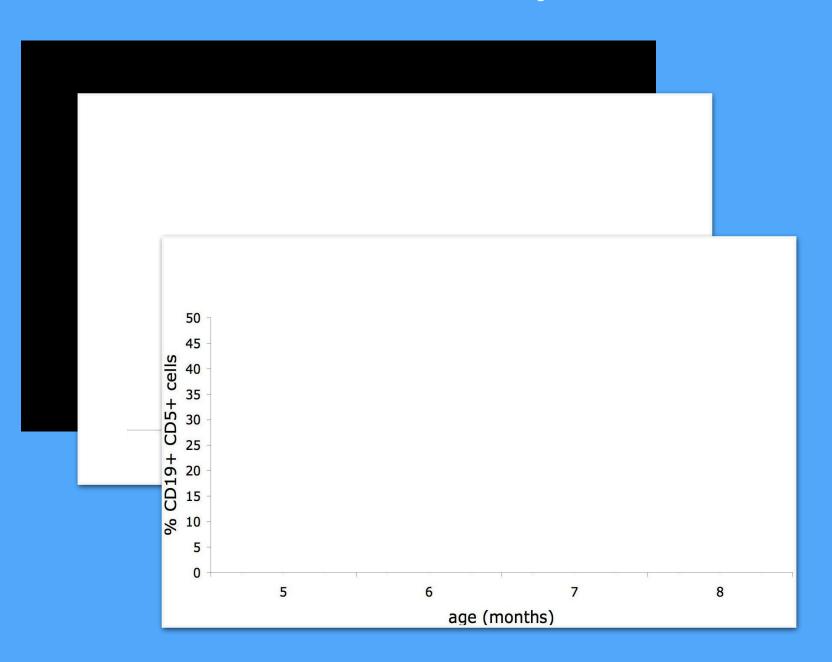


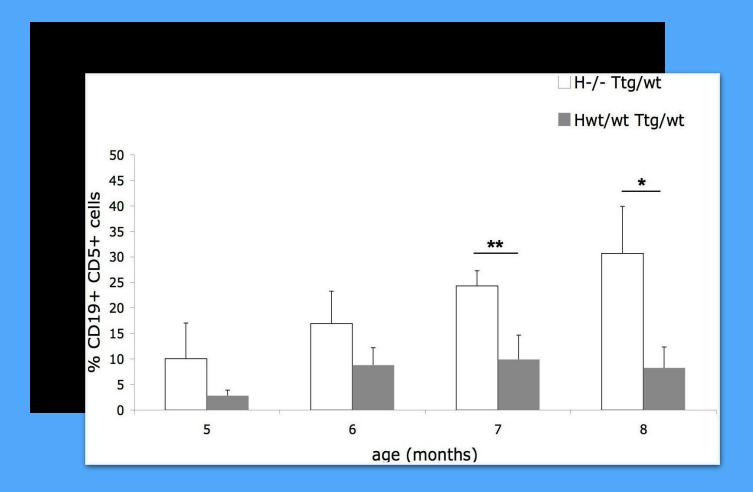
500ms



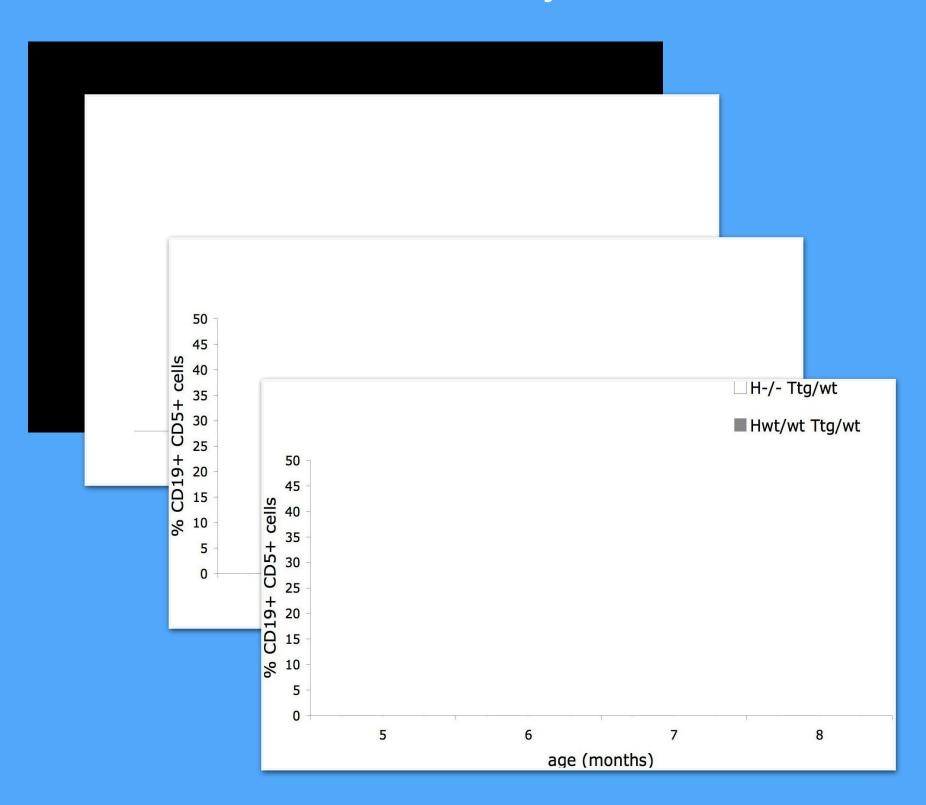


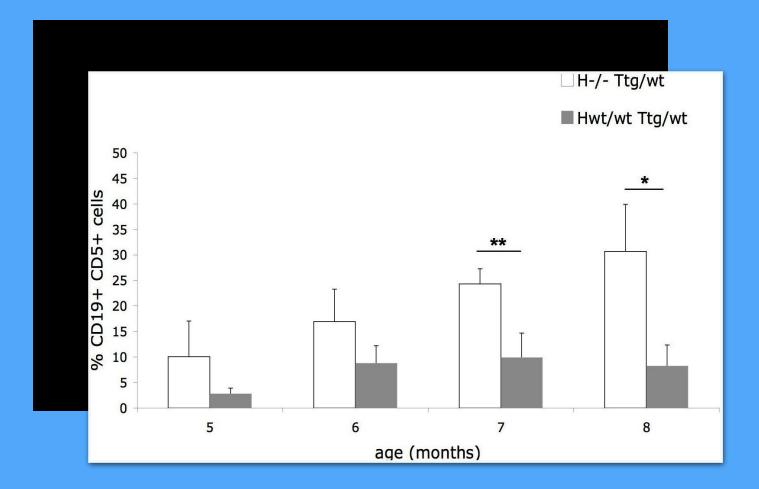
500ms



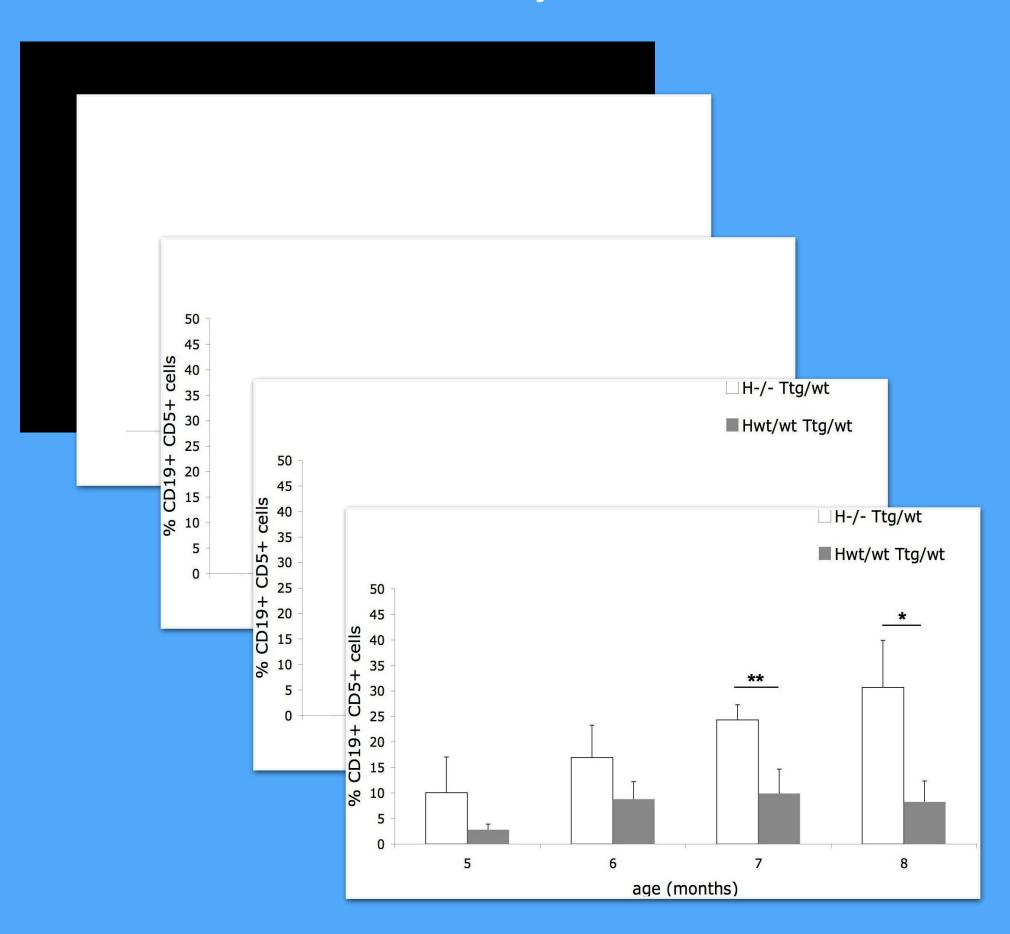


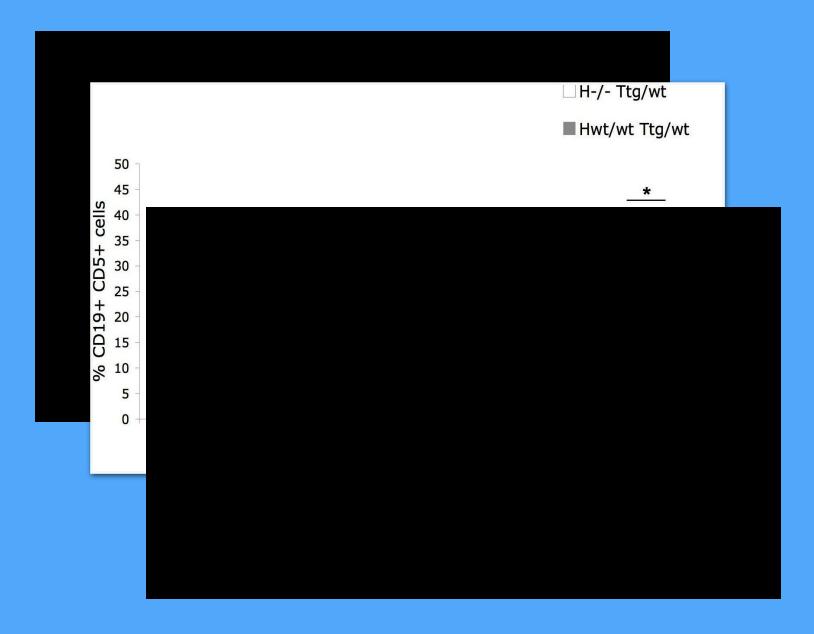
500ms



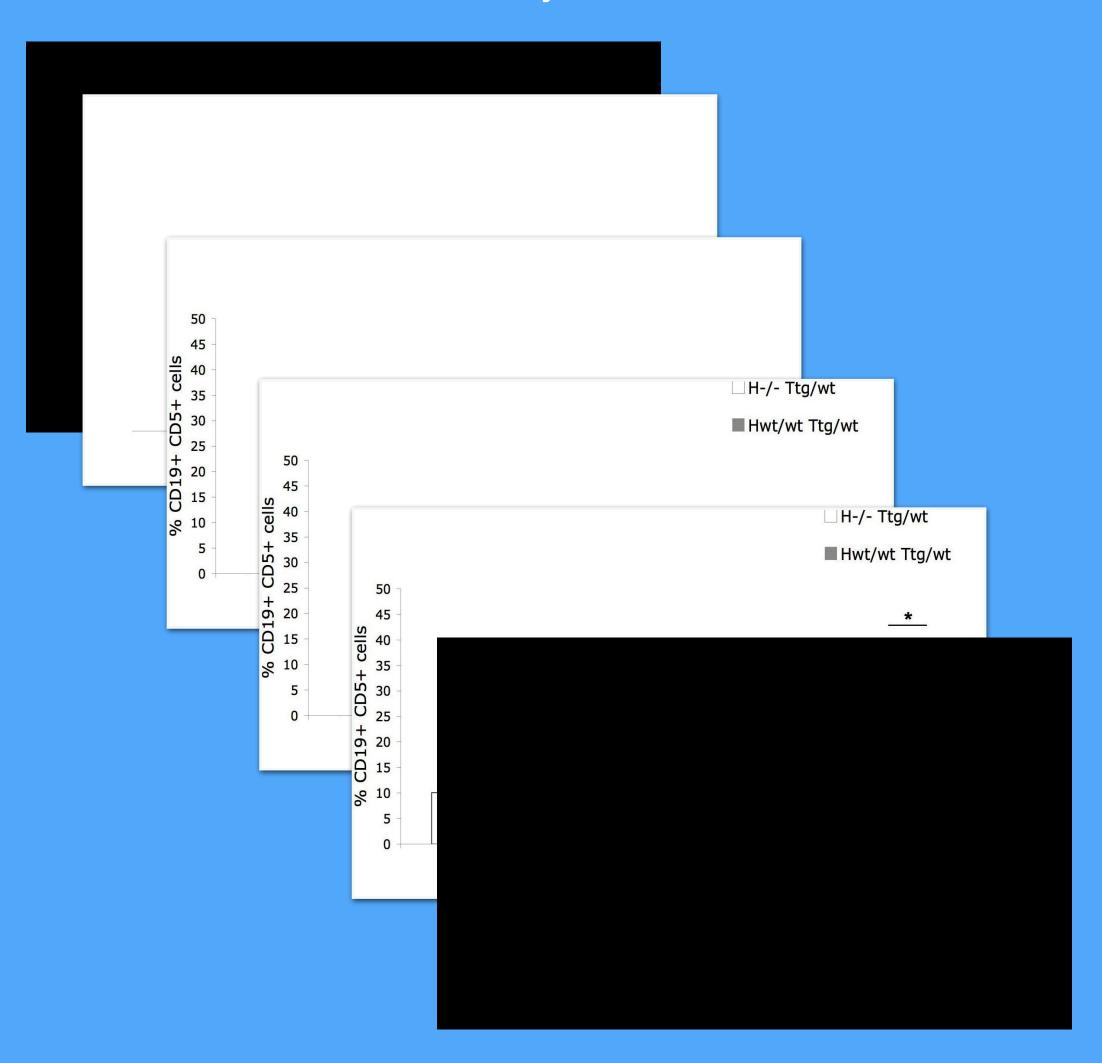


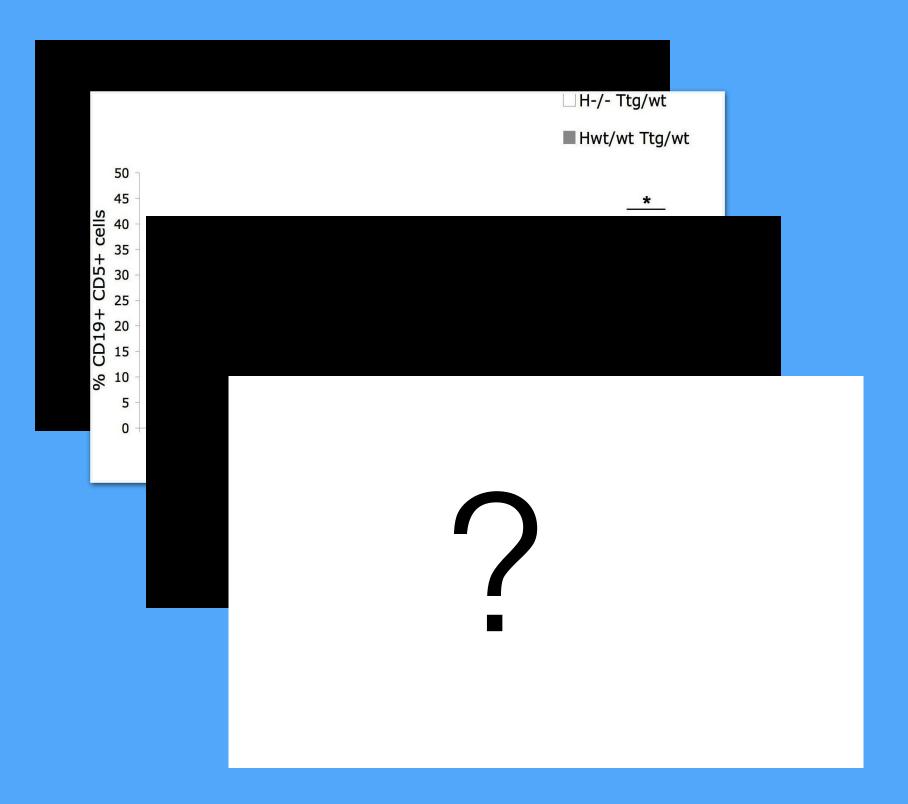
500ms





800ms







Appreciate any feedback

(Presented by Nina(Zhuxiaona) Wei and Christine(Yentin) Lin)

Research question specific enough, meaningful?

Suggestions for experiment design?

- Within-Subjects or Between-Subjects design
- Should study different types of chart? Charts with different complexity?
- Independent or Dependent variables?

Suggestions for experiment materials?

- Professional statistical data charts/figures from papers, unfamiliar domain Biology, Chemistry etc.
- Online narrative visualization, Human Development Trend etc.

Others?

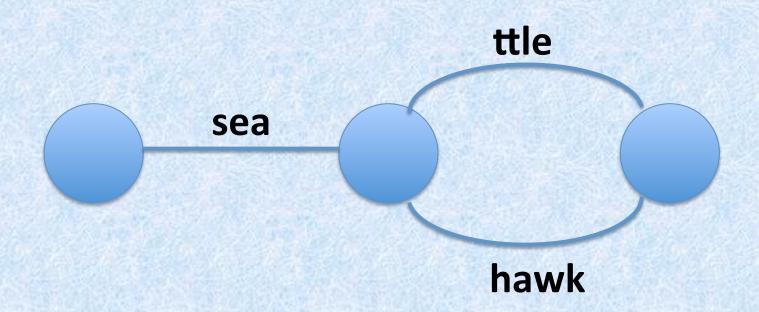
Hope you enjoy our presentation.

Special thanks to Jeff, Steven(MSR), Ham

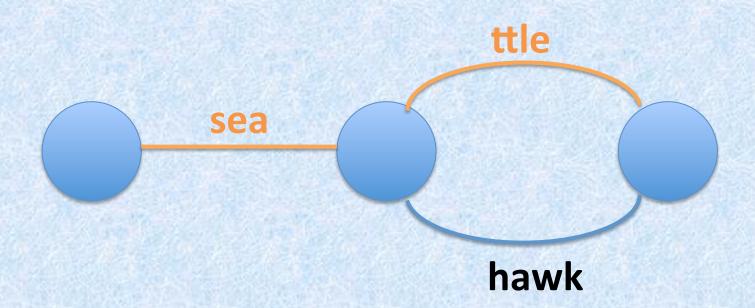
Visualization of Lattice Structure

Shengjie Wang

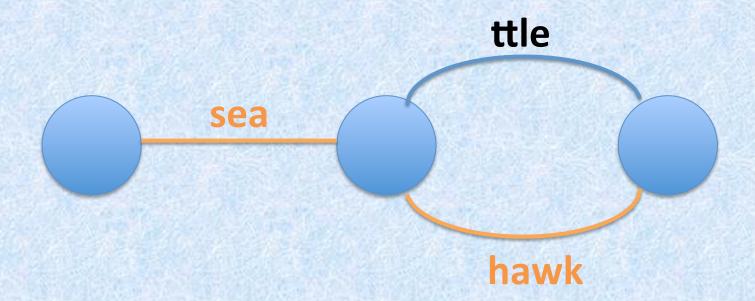
A Simple Lattice



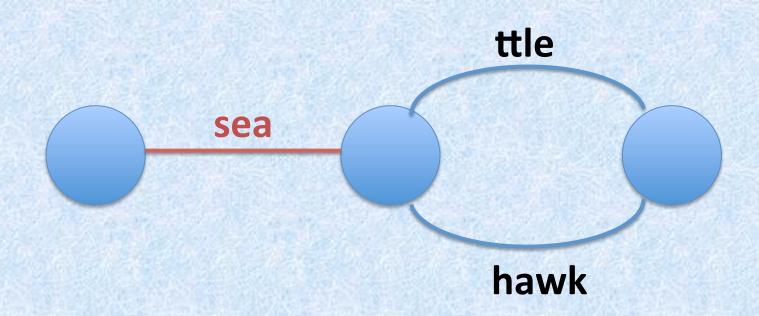
Seattle



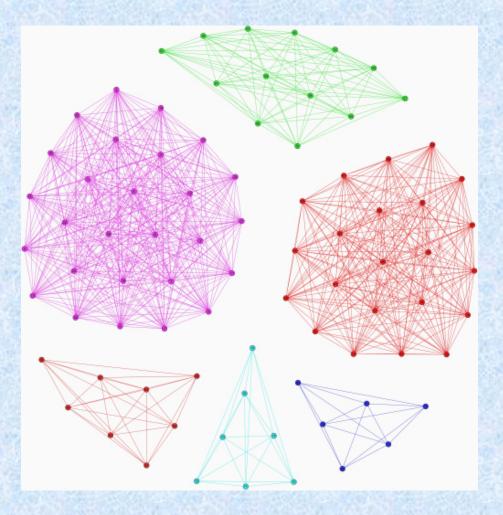
Seahawk



Common Edge: "sea"

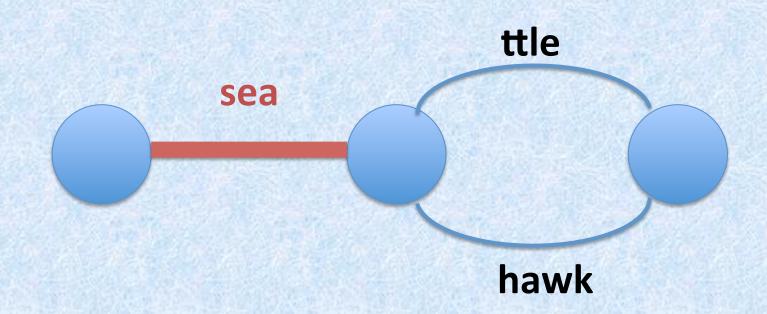


Visual Encoding: Graph Cluster

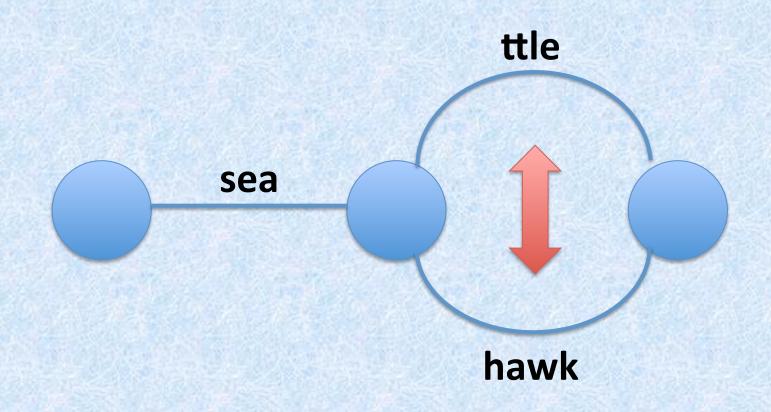


https://wisonets.wordpress.com/2010/11/22/

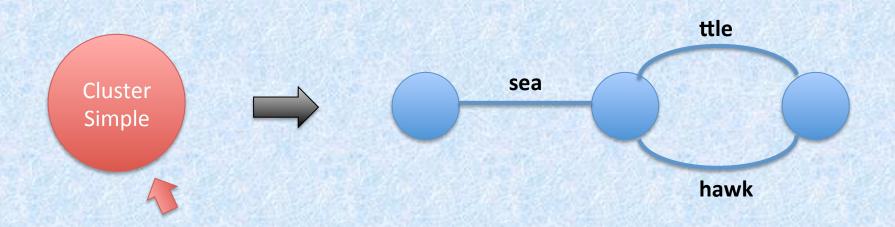
Visual Encoding: Common Edge



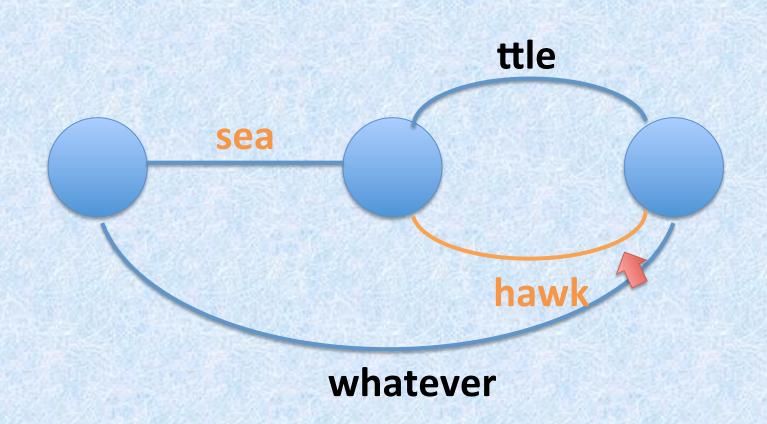
Visual Encoding: Compelling Edges



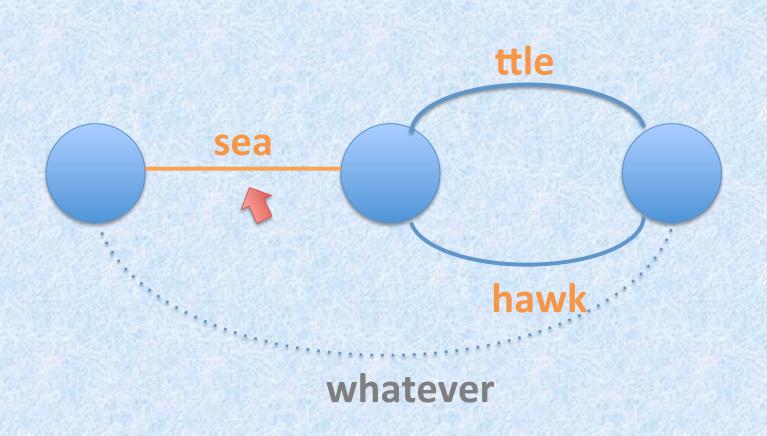
Interaction: Drill Down Cluster



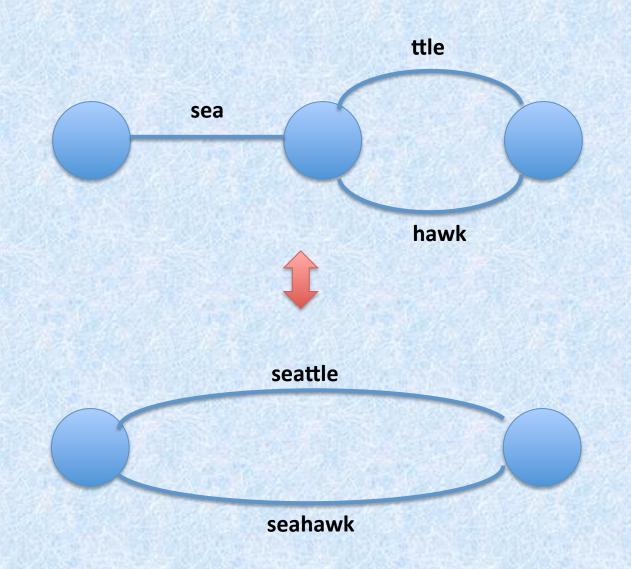
Interaction: Query Edge



Interaction: Query Edge



Interaction: Add/Remove C.E.



Related Works

- [1] Abello, James, Frank Van Ham, and Neeraj Krishnan. "Ask-graphview: A large scale graph visualization system." Visualization and Computer Graphics, IEEE Transactions on 12.5 (2006): 669-676.
- [2] Holten, Danny, and Jarke J. Van Wijk. "Force-Directed Edge Bundling for Graph Visualization." Computer Graphics Forum. Vol. 28. No. 3. Blackwell Publishing Ltd, 2009.
- [3] Schaeffer, Satu Elisa. "Graph clustering." Computer Science Review 1.1 (2007): 27-64.
- [4] Cui, Weiwei, et al. "Geometry-based edge clustering for graph visualization." Visualization and Computer Graphics, IEEE Transactions on 14.6 (2008): 1277-1284.

Feedback

Should we cluster the graph based on nodes?
 Can we effectively show the information of conveyed in each path if we apply the clustering?

My name: Shengjie Wang









Decoding the Text Encoding

Hamid Izadinia and Fereshteh Sadeghi

Final project progress presentation

Data Visualization

(CSE512)

From Text Visualization to Data

Input

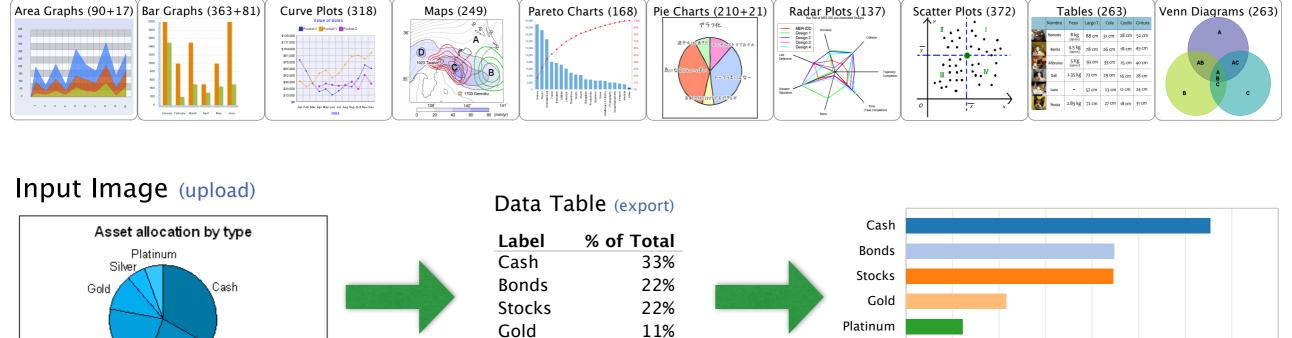
```
troops college whether one back success responsibility job workers company system nation need place schools energy leading think future had successed as a success responsibility job workers of think future of think future
```

Output

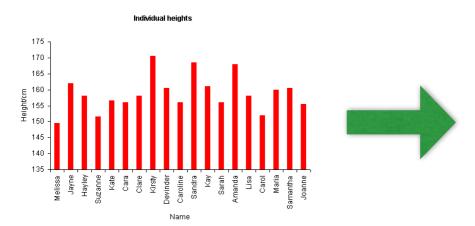
```
(People, 100)
(new , 83 )
(jobs , 78 )
(years , 77 )
(make , 69 )

.
(care , 8 )
(child , 7 )
```

Related Works



Input Image (upload)

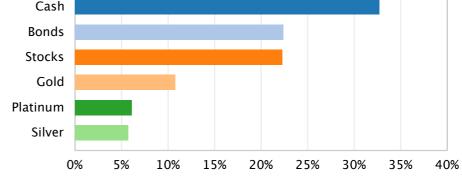


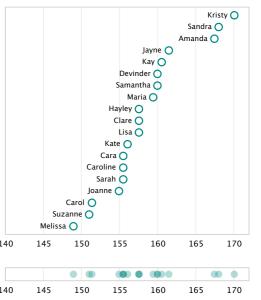
Label	% of Total
Cash	33%
Bonds	22%
Stocks	22%
Gold	11%
Platinum	6%
Silver	6%



151

Carol

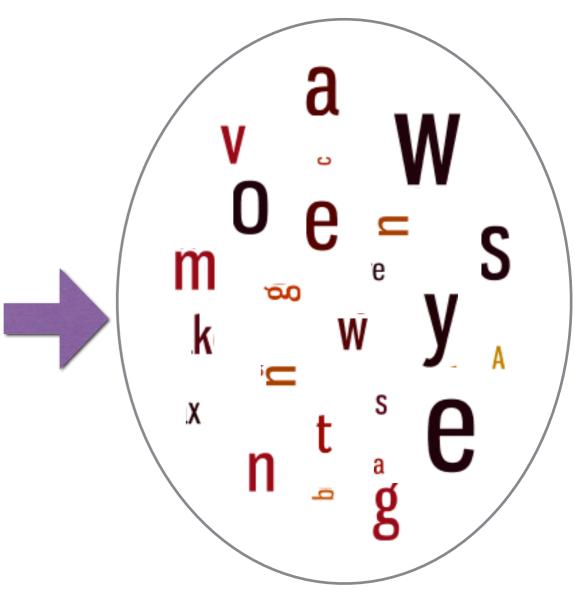




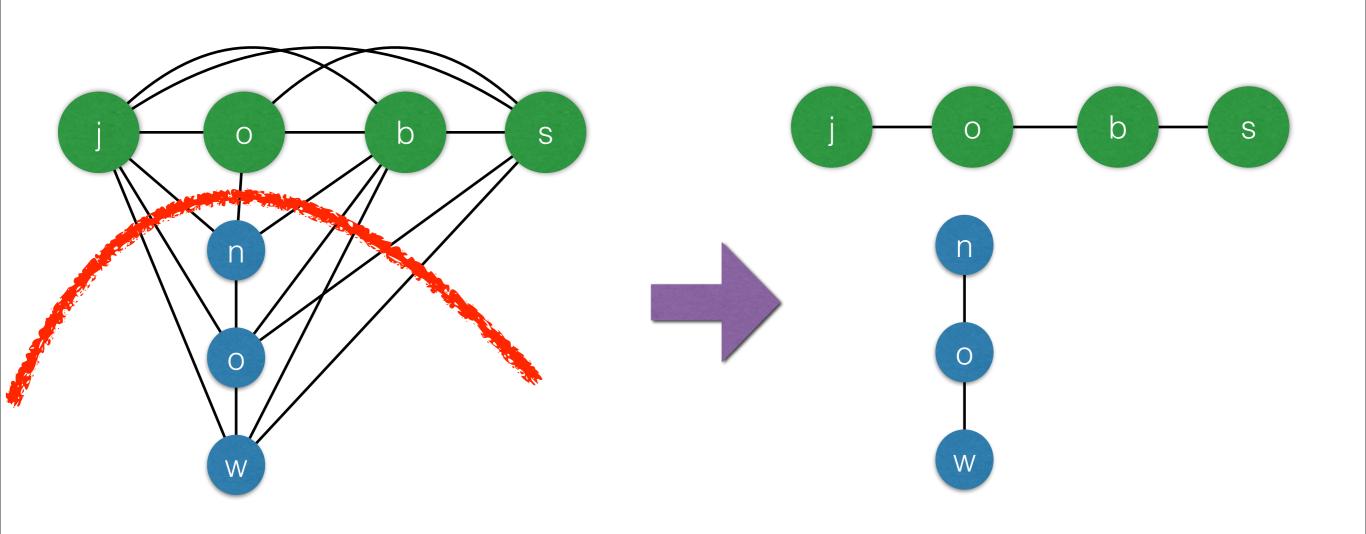
ReVision: automated classification, analysis and redesign of chart images. Savva, M and Kong, N and Chhajta, A and , Fei-Fei L. and Agrawala, M and Heer, J.

Letter extraction & OCR

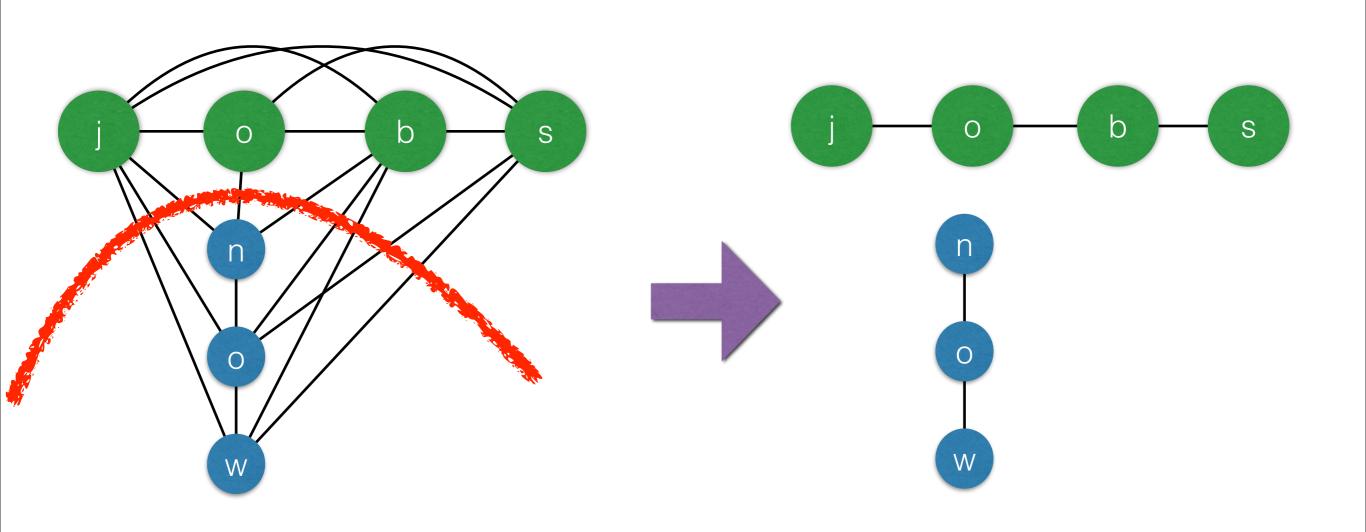




Word extraction



Word extraction & Size estimation







take





Challenges

- Dense arrangement of letters and words
- Different Fonts
- No color clue



Feedback

- Is there any data set available for this task?
- What kind of evaluation is appropriate?
- Any idea for redesigning the text visualization
- Do you know of any scaling mechanism in standard text visualization softwares? (linear, log, ranking, ...)

Visualize NLP Annotations for Crowdsourcing

Hanchuan Li, Haichen Shen, Shengliang Xu and Congle Zhang

Statistical Nature Language Processing

• NLP: interaction between computer and human languages

Statistical approaches have made great success



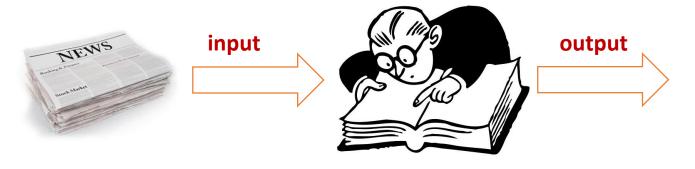
But ...

• Need labeled training data, which is very expensive

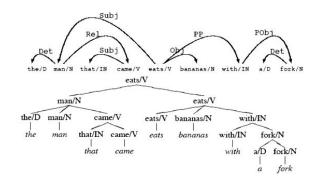


Even worse...

Structured prediction, expert only

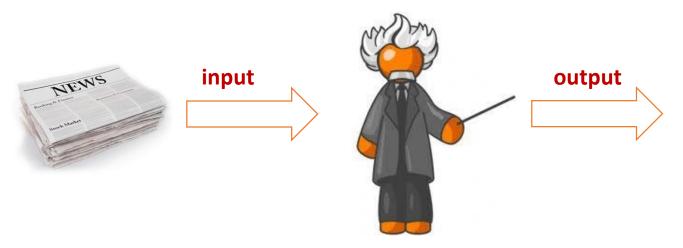


"I voted for Nader because he was most aligned with my values," she said.

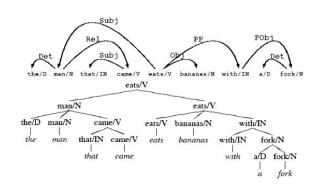


Even worse...

• Structured prediction (generate trees/graphs), expert only

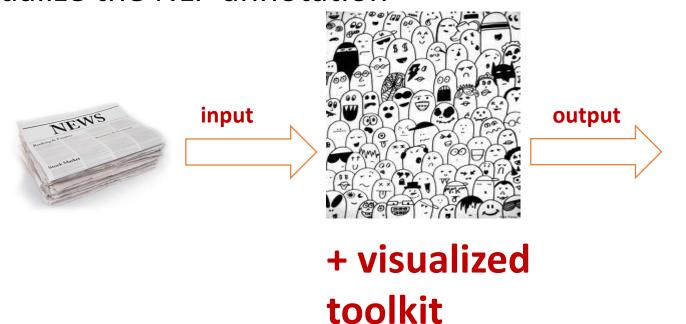


"I voted for Nader because he was most aligned with my values," she said.

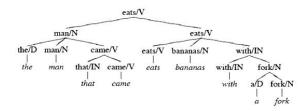


Let Crowds do the job

Visualize the NLP annotation

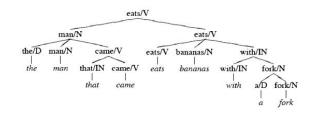


"I voted for Nader because he was most aligned with my values," she said.

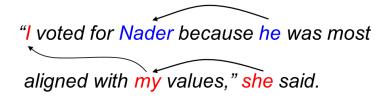


Goal

Visualize two categories of annotations



Tree construction



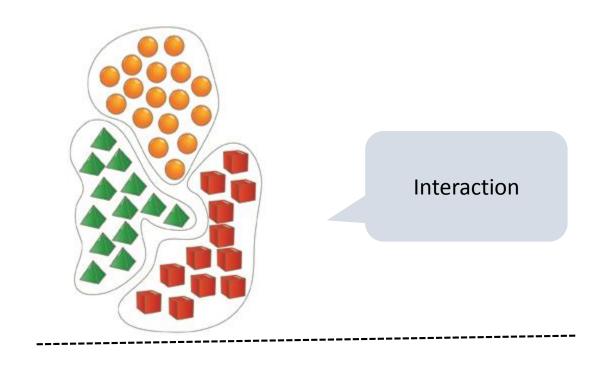
Clustering

• Undo/redo

Design

Input

"I vote for Nadar because he most aligned with my values", she said.



Link (he, Nadar)
Tag (she, "speaker")
Link (I, my)

History

Question

- Flexibility: easily transferred to other tasks
 - Take HTML as input, with target objects tagged.
 - Let NLP experts to design the input visualization

Interface

Presented by Congle Zhang, Shengliang Xu, Haichen Shen, Hanchuan Li

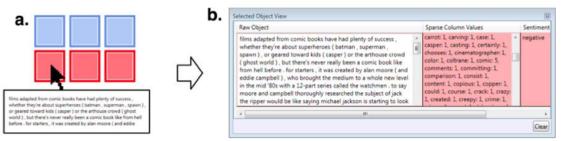
Using Visualization to Optimize Text Classification

Jeff Snyder, Zorah Fung, Brian Walker, Zening Qu

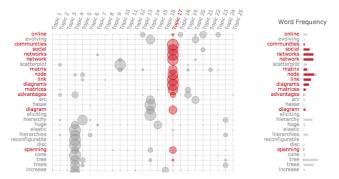
Problem Description

- Text classification tasks are important in a wide variety of domains
- Create a model that assigns documents (tweets, papers) into classes ([important/not important], [positive/neutral/negative])
- We use visualization to
 - Help analysts to understand and tune the inner workings of their models,
 - Compare the performance of different models, at both a high level and on the level of individual documents, and
 - Understand the essential contours of their data that affect model performance.

Related Work



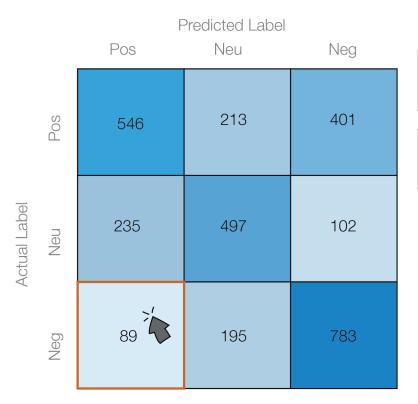
Patel, Kayur, et al. "Gestalt: integrated support for implementation and analysis in machine learning." Proceedings of the 23nd annual ACM symposium on User interface software and technology. ACM, 2010.



Chuang, Jason, Christopher D. Manning, and Jeffrey Heer. "Termite: Visualization techniques for assessing textual topic models." Proceedings of the International Working Conference on Advanced Visual Interfaces. ACM, 2012.

Prototype and Storyboard

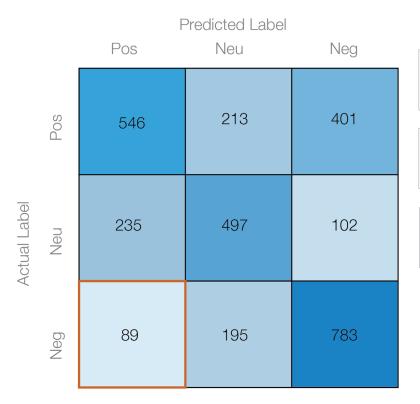
Tweet Classification

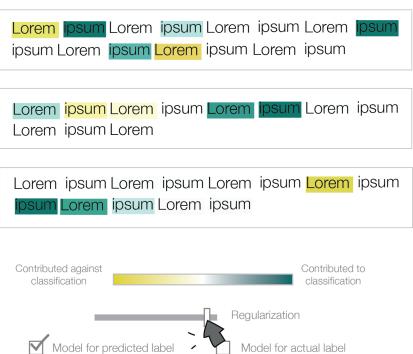




Prototype and Storyboard

Tweet Classification





Demo

http://cse512-14w.github.io/fp-jasnyder-zorahf-bdwalker-zqu/web

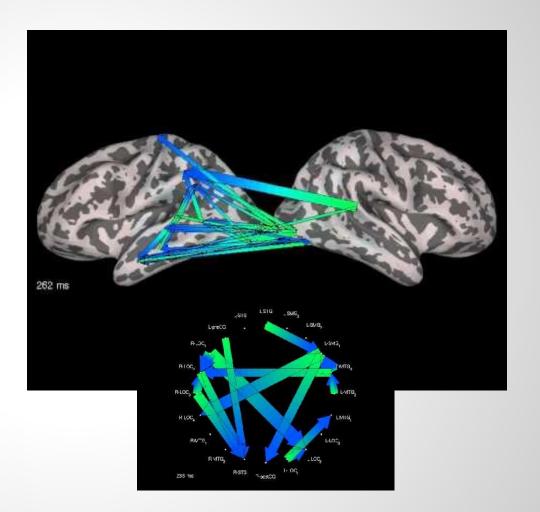
CSE512 Final Project

Yang Chaoyu, Aniket Handa, Gregory Nelson, Alexander Conrad Nied

Motivation

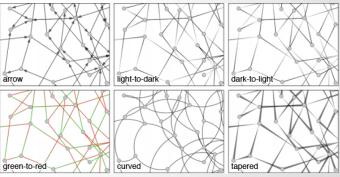
Networks +
Time Varying Edge Data

Dangerous amounts of information, may not be meaningful.



Workspace

Using D3
Traffic flow is very popular
Not integrated to D3
Time-varying visualizations rare



http://bl.ocks.org/mbostock/4062045

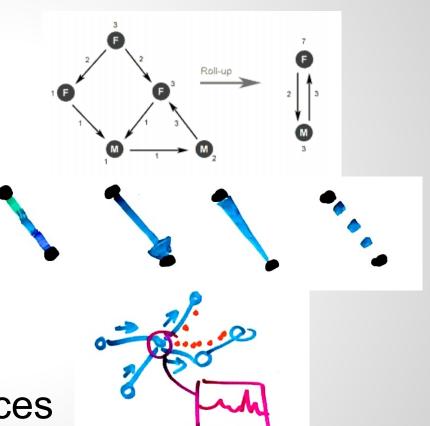
http://boundary.com/blog/2012/05/14/visualizing-network-flow-data/

Methods

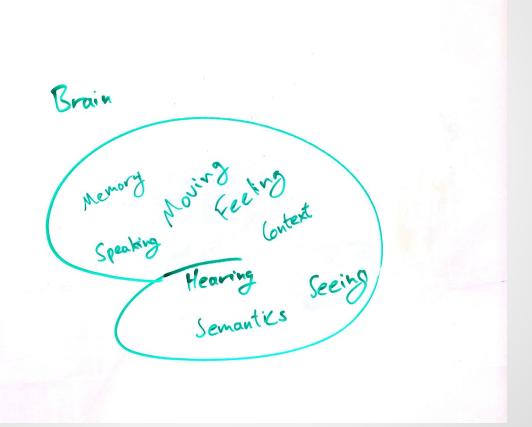
"PivotGraph" & roll-up

Featural Edges or Animated Packets

Sensors - Select a node Get history/plots and traces



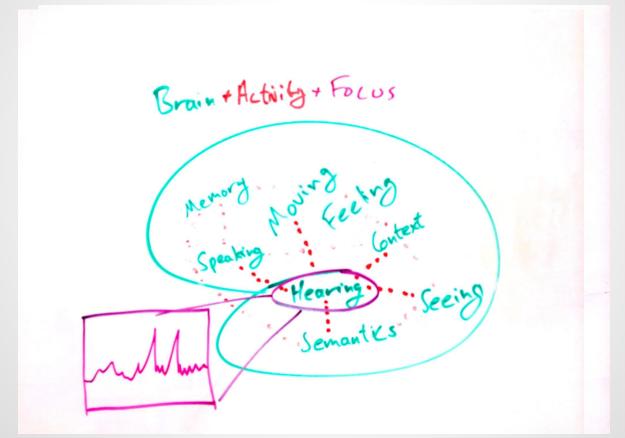
Storyboard



Storyboard



Storyboard



Questions

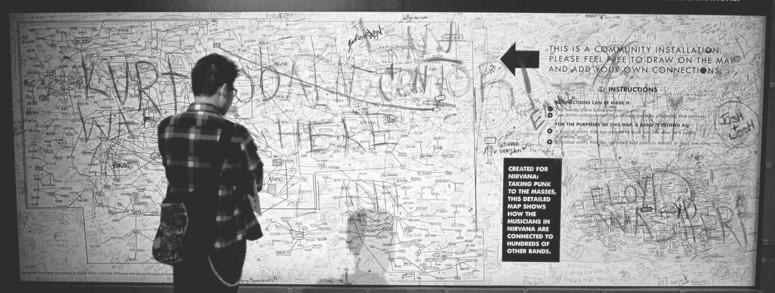
Did we miss any existing work?

Do you have a juicy dataset for this?

Do you have questions?

SEATTLE BAND MAP

THE SEATTLE BAND MAP SHOWCASES THE NORTHWEST'S VIBRANT MUSIC SCENE BY DOCUMENTING HUNDREDS OF REGIONAL BANDS THAT HAVE PERFORMED THROUGHOUT THE DECADES. IT ALSO EXPLORES HOW THESE BANDS INTERCONNECT THROUGH PERSONAL RELATIONSHIPS AND COLLABORATIONS.

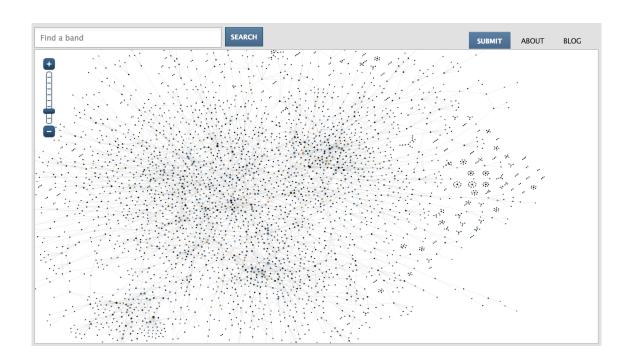


Seattle Band Map

CSE 512 Final Project Chase Wu | Susanne Hsu

Seattle Band Map

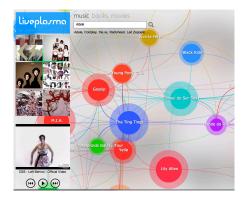
The current visualization is difficult to navigate and is not organized in a way that supports exploration or music discovery

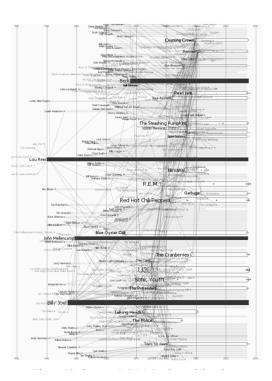


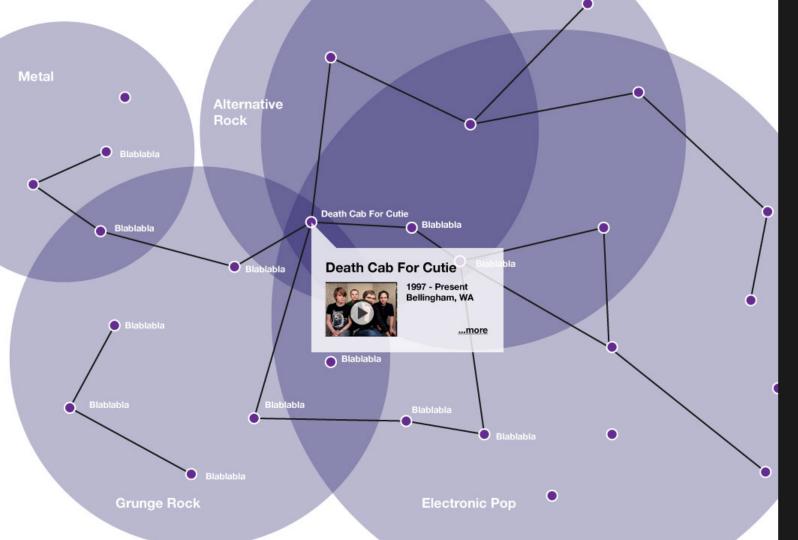
Relevant Work

Existing visualizations force users to define a starting point, rather than using the network structure to reveal areas of interest and guide discovery









SEATTLE **BAND** MAP

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VIEW





TIME PLACE

Challenges

How to best support exploration and discovery: what's the most appropriate clustering and layout algorithm?

What information would you want to see/hear on the map and what would you want to do with it?

What information should be available in the global view vs. zoomed in view?

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