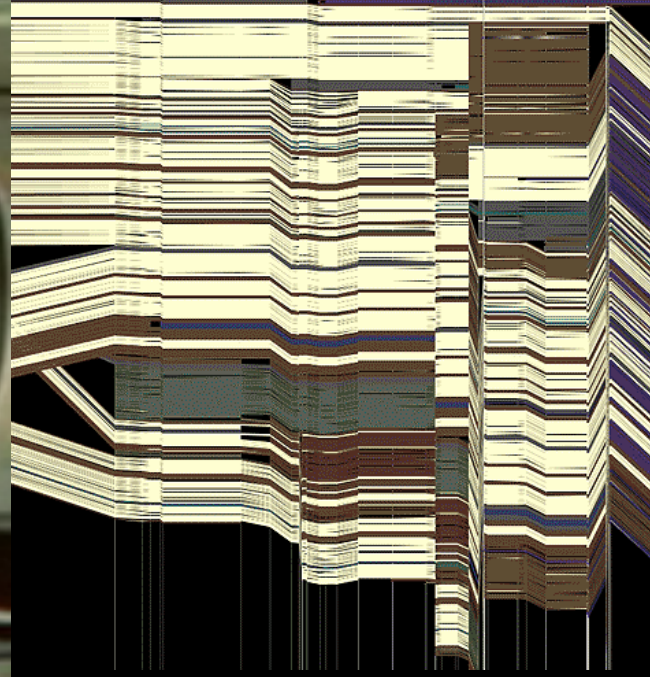
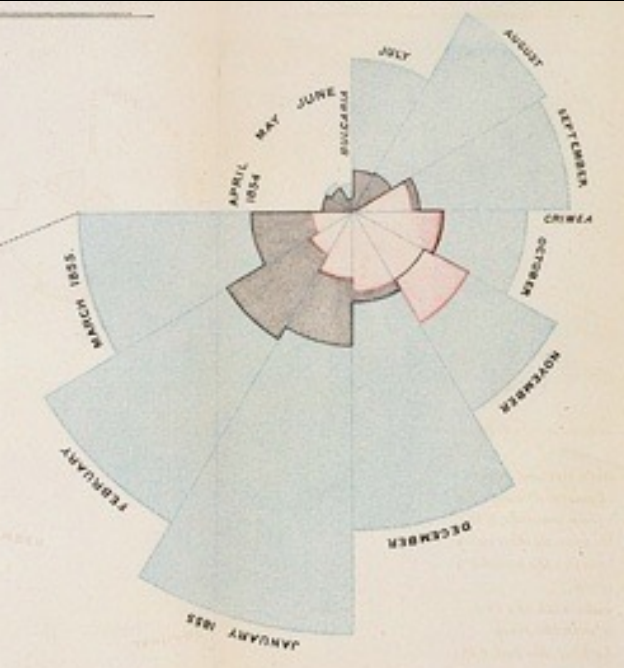


CSE 512 - Data Visualization

Design Critiques



Jeffrey Heer University of Washington

Final Project

Final Project

Design a new visualization system or technique.

Many options...

New system for a chosen domain + data set

Novel visualization / interaction technique

Design study or experiment

Deliverables

4-6 page paper in conference paper format

In-class progress report

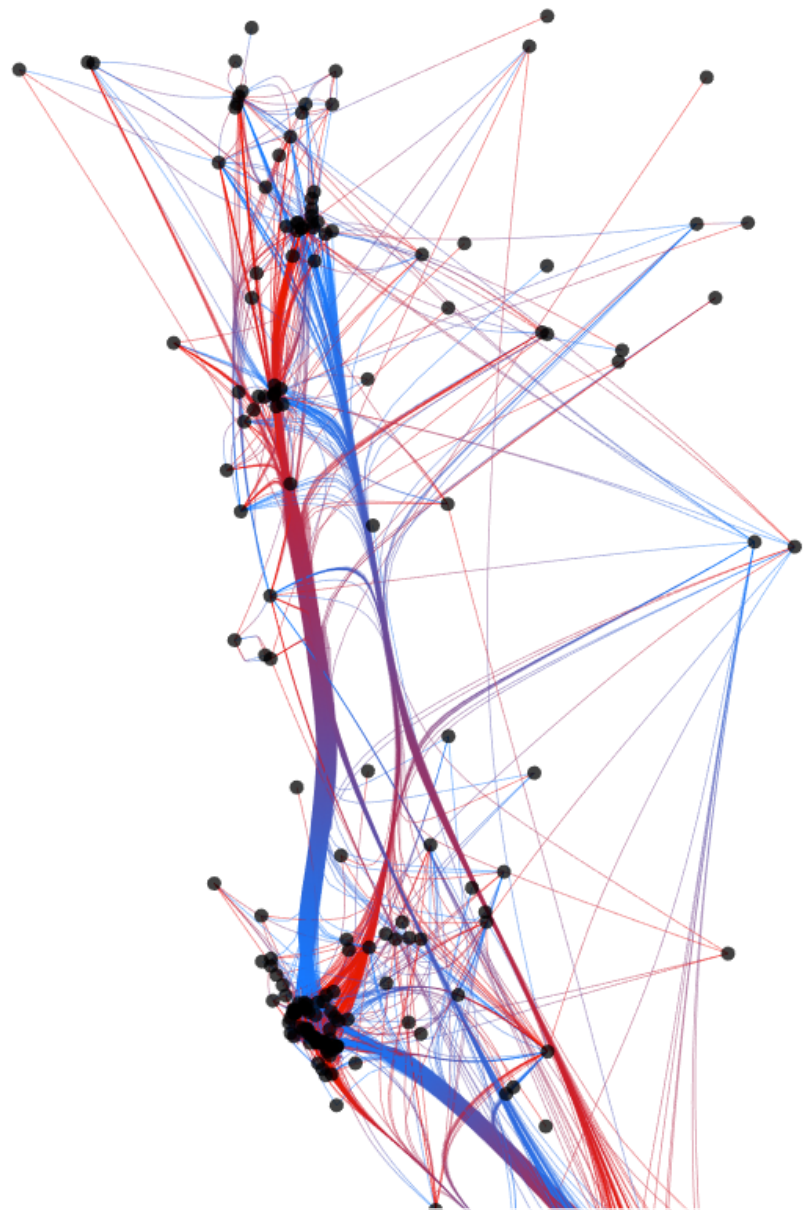
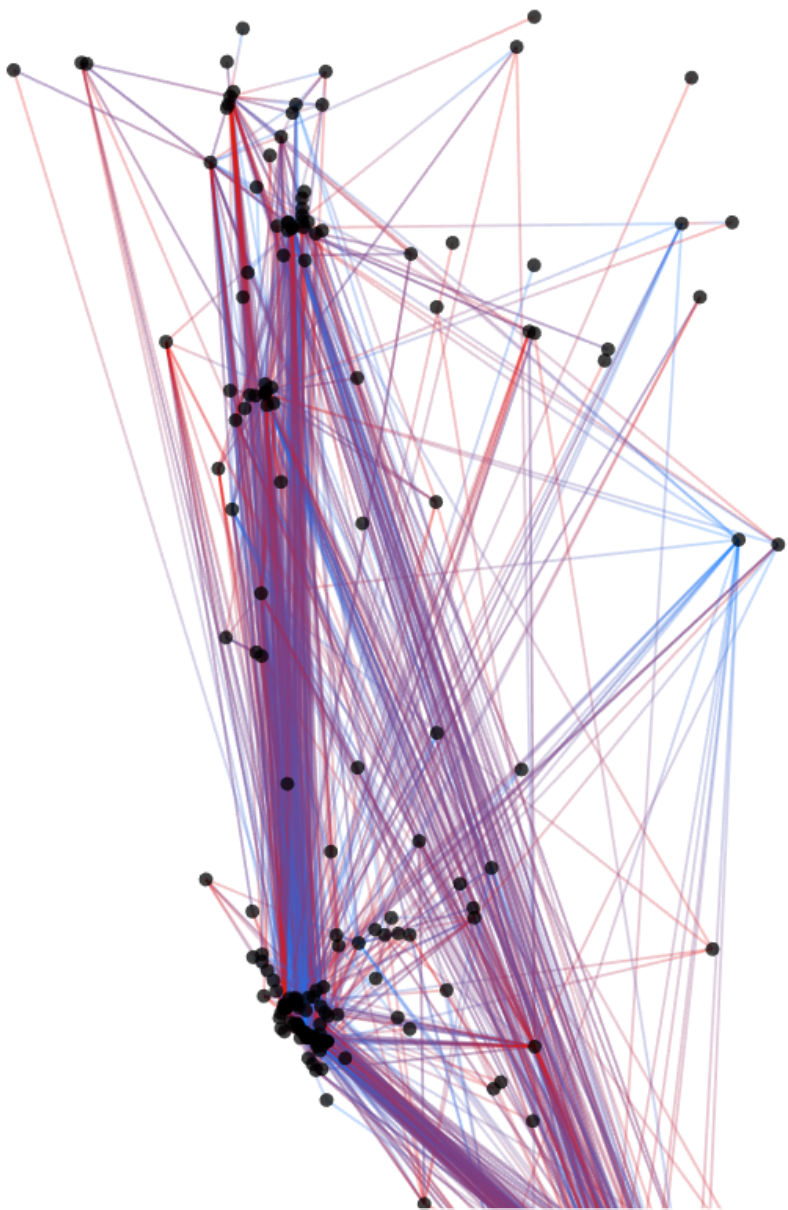
Final poster & demo session



RunMonster

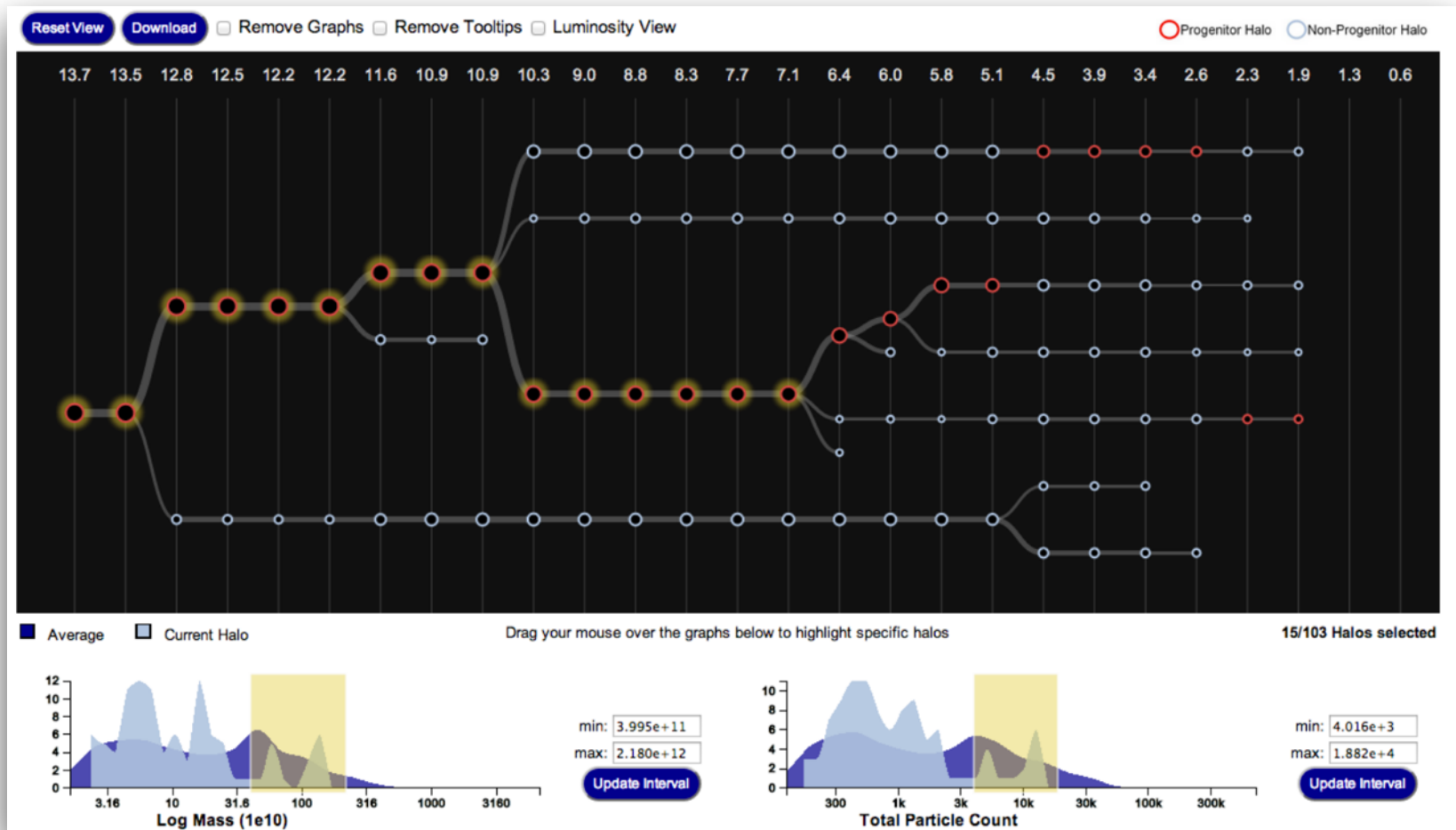
Troy Brant & Steve Marmon





Divided Edge Bundling – David Selassie

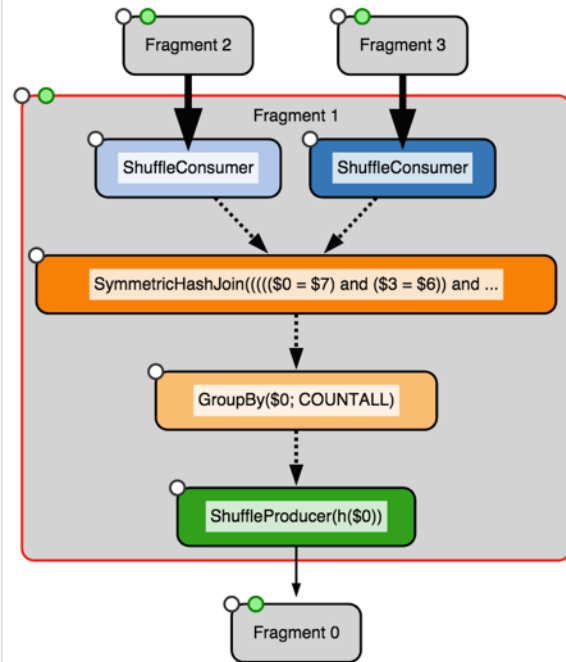
Visualizing Galaxy Merger Trees



S. Loebman, J. Ortiz, L. Orr, M. Balazinska, T. Quinn et al. [SIGMOD '14]

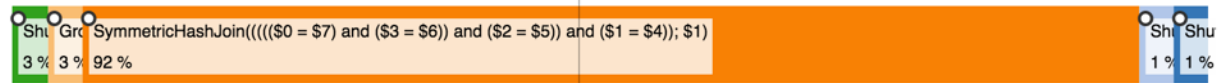
Perfopticon Distributed Query Performance

Physical Query Plan:

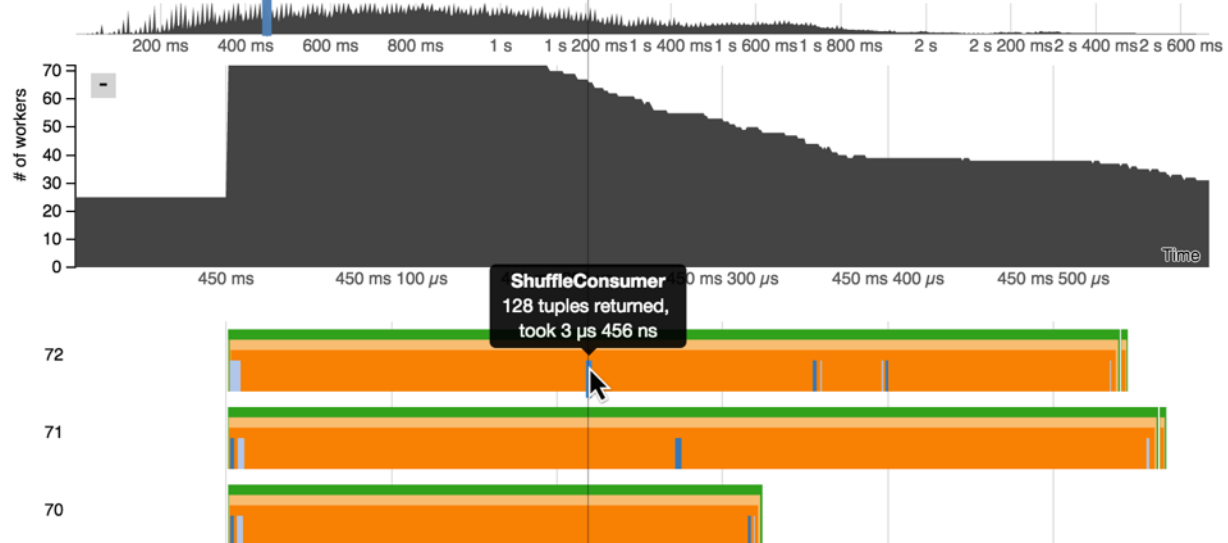


Overview / Operators inside fragment 1

Query time contribution collapse/expand

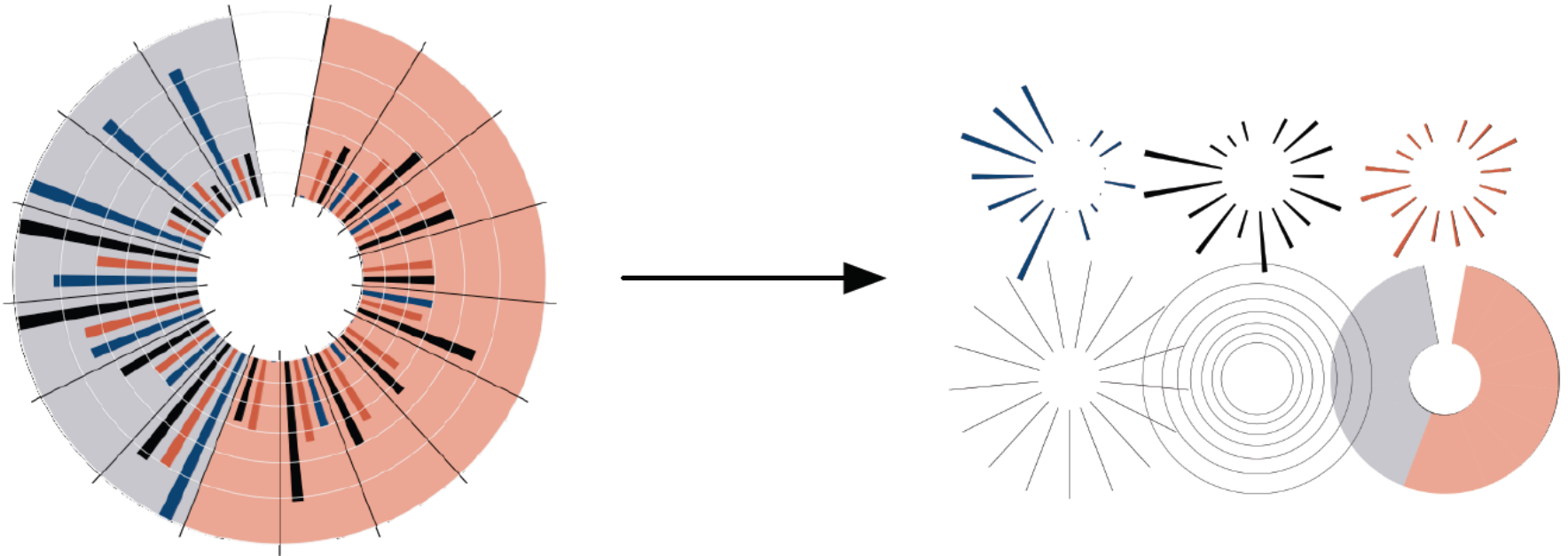


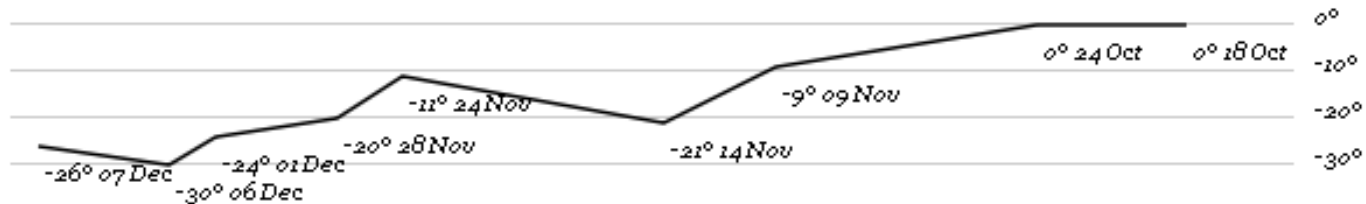
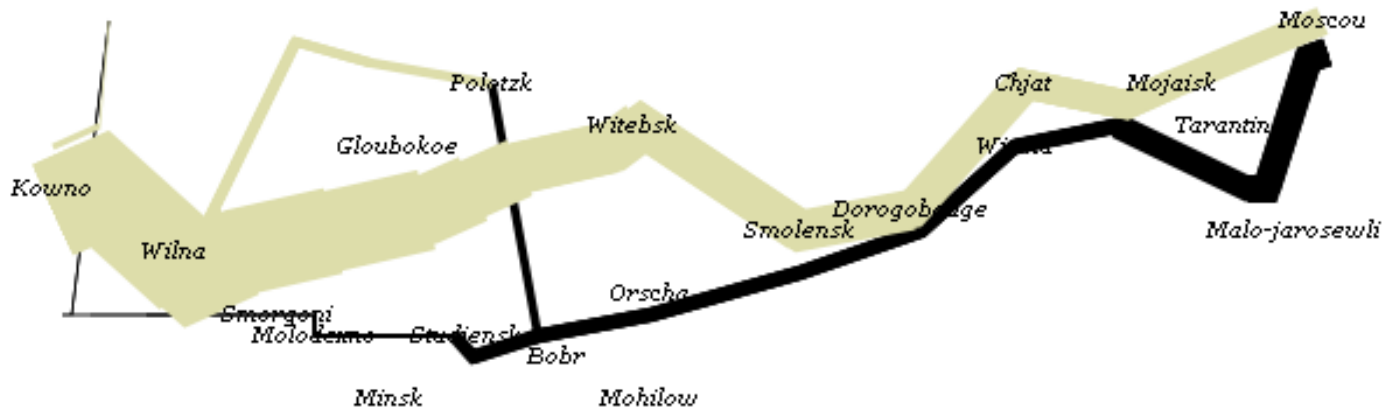
Detailed execution



Protovis: A Graphical Toolkit for Visualization

Mike Bostock





```

var army = pd.nest(napoleon.army, "dir", "group");
var vis = new pv.Panel();

var lines = vis.add(pv.Panel).data(army);
lines.add(pv.Line)
  .data(function() army[this.idx])
  .left(lon).top(lat).size(function(d) d.size/8000)
  .strokeStyle(function() color[army[panelIndex][0].dir]);

vis.add(pv.Label).data(napoleon.cities)
  .left(lon).top(lat)
  .text(function(d) d.city).font("italic 10px Georgia")
  .textAlign("center").textBaseline("middle");

```

```

vis.add(pv.Rule).data([0,-10,-20,-30])
  .top(function(d) 300 - 2*d - 0.5).left(200).right(150)
  .lineWidth(1).strokeStyle("#ccc")
  .anchor("right").add(pv.Label)
  .font("italic 10px Georgia")
  .text(function(d) d+"°").textBaseline("center");

vis.add(pv.Line).data(napoleon.temp)
  .left(lon).top(tmp) .strokeStyle("#0")
  .add(pv.Label)
  .top(function(d) 5 + tmp(d))
  .text(function(d) d.temp+"° "+d.date.substr(0,6))
  .textBaseline("top").font("italic 10px Georgia");

```

Visualizing the Republic of Letters

Daniel Chang, Yuankai Ge, Shiwei Song

Republic of Letters

1700



FILTER BY AUTHOR Clear All

- Damien Desormes
- Daniel Cornabs
- Daniel de Pury
- Daniel Defoe
- Daniel Malthus
- Daniel Marc Antoine Chardon
- Daniel Muller

TOP CITIES AND AUTHORS

Letters received (blue) Letters sent (green)

City/Country	Letters received	Letters sent
London, England	546	557
Oates, England	304	250
Dublin, Ireland	208	154
Paris, France	238	112
Twickenham, England	18	101
John Locke	350	253
Joseph Addison	30	244
Voltaire	26	231
Jonathan Swift	83	159
Alexander Pope	28	150

Possible Project Ideas

Team up with **local researchers!**

Advance your **existing research.**

Pick an **open problem** of interest.

Work in a domain with **real stakeholders.**

Final Project Schedule

<i>Proposal</i>	Tues, May 10 (5pm)
<i>Presentation</i>	Thur, May 19 (slides: 5/18, 5pm)
<i>Poster & Demo</i>	Tues, Jun 7 (5-8pm)
<i>Final Paper</i>	Thur, Jun 9 (8am)

Logistics

Groups of up to 4 people

Clearly report responsibilities of each member

Tips for a Successful Project

Focus on a compelling **real-world problem**.
How will you gauge success?

Consider **multiple design alternatives**.

Prototype quickly (use Tableau, R, Gephi...).

Seek feedback (representative users, peers, ...).

Even informal usage can provide insights.

Choose **appropriate team roles**.

Start early (and read the suggested paper!)

A3 Design Critiques

Critique Questions

What is the purpose of the visualization?

Does it address an important topic?

Does it serve its purpose well?

Does it convey the data honestly?

Does it show the appropriate level of detail?

Are expressive & effective visual encodings used?

Do the interactions aid exploration of the data?

Is the design innovative?

How might things be done differently?

I Like... / I Wish... / What If?

I LIKE...

Praise for design ideas and/or well-executed implementation details. *Example: "I like the navigation through time via the slider; the patterns observed as one moves forward are compelling!"*

I WISH...

Constructive statements on how the design might be improved or further refined. *Example: "I wish moving the slider caused the visualization to update immediately, rather than the current lag."*

WHAT IF?

Suggest alternative design directions, or even wacky half-baked ideas. *Example: "What if we got rid of the slider and enabled direct manipulation navigation by dragging data points directly?"*

I Like... / I Wish... / What If?

I LIKE...

The goal of supporting developers to improve decoupling.

The "cut-line" interaction to isolate links of interest.

The use of gradients to show edge directionality.

I WISH...

I could author multiple cut-lines for compound queries.

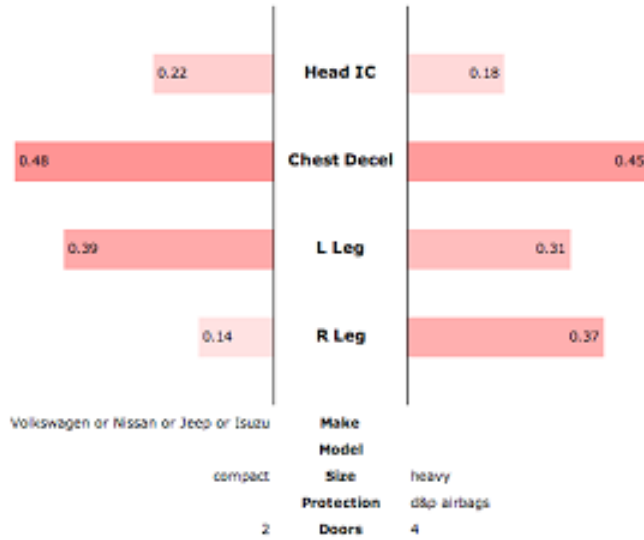
More details on demand were shown upon mouse-hover.

WHAT IF?

You could incorporate information from applications that use this code? How often are different modules used?

Crash Compare

by Steve Lesser and Jeff Wear



Make

Isuzu
 Jeep
 Lexus
 Lincoln
 Mazda

Model

Amigo
 I-Mark
 Rodeo
 Spacecab
 Spacecab

Size

mini
 compact
 light
 medium
 heavy

Protection

Seatbelts
 Driver Airbag
 D & P Airbags

Doors

2
 4
 Other



Driver

Make

Acura
 Audi
 BMW
 Buick
 Cadillac

Model

Size

compact
 light
 medium
 heavy
 multi-purpose vehicle

Protection

Seatbelts
 Driver Airbag
 D & P Airbag

Doors

2
 4
 Other

Source: The National Transportation Safety Administration

I Like... / I Wish... / What If?

I LIKE...

The use of dummies, including dual encoding with bar charts.
The ability to form rich queries over the data.

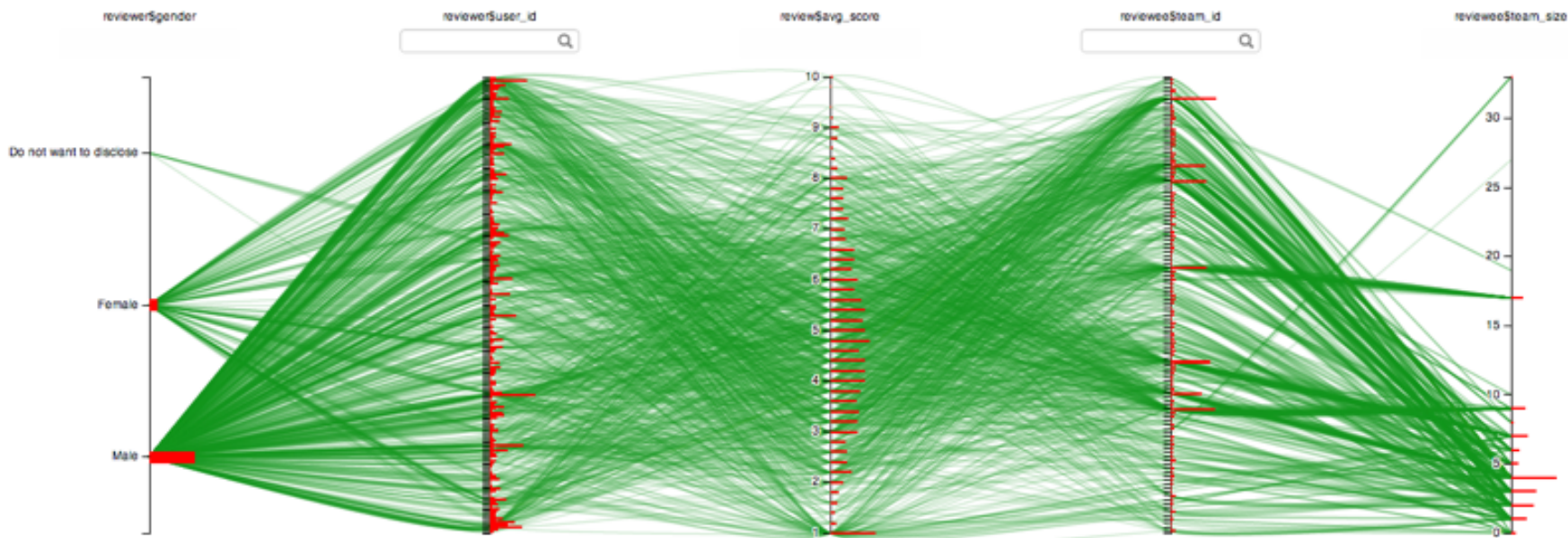
I WISH...

The query widgets were less intimidating and faster to navigate.
The query widgets included more visualized information (scent).
One could author queries based on safety ratings, such as the most injuries overall, or more leg injuries, and so on...

WHAT IF?

Instead of comparing two selections at a time, one could make comparison across the full space of the data? What might that look like? Small multiples or overlays?

REVIEWER gpa academic_major age_range location gender signin_count user_id
 REVIEW avg_score score1 score2 score3 score4 score5
 REVIEWEE team_id team_size



reviewer\$gpa	reviewer\$acad...	reviewer\$age_...	reviewer\$locat...	reviewer\$gender	reviewer\$signi...	reviewer\$user_id	review\$avg_s...	review\$score1	review\$score2	review\$score3	review\$score4	review\$score5	reviewee\$tea...	reviewee\$tea...
NULL	NULL	NULL	NULL	NULL	21	37212	4	4	5	6	4	1	5069	4
NULL	NULL	NULL	NULL	NULL	21	37212	7.4	8	7	7	6	9	5470	17
Does not ...	Science	26-30	Netherlands	Male	124	2230	6.8	7	7	8	7	5	5693	7
Does not ...	Science	26-30	Netherlands	Male	124	2230	2.2	2	1	3	4	1	5836	4
Do not w...	Business	31-35	Spain	Male	80	2848	4.4	4	1	7	9	1	5069	4
3-3.49	Other	21-25	Spain	Female	75	2826	5	5	5	5	5	5	5215	4
3-3.49	Engineering	over 50	United St...	Male	110	19502	3.6	5	5	2	3	3	5215	4
3.5-4.00	Science	36-40	Greece	Male	125	27386	3.6	3	6	5	3	1	5250	3
3-3.49	Engineering	over 50	United St...	Male	110	19502	7	9	5	9	6	6	5693	7

I Like... / I Wish... / What If?

I LIKE...

The 1D histograms on the parallel coordinates display.
The use of brushing and linking between components.
Attention to small details, such as white masks for axis labels.

I WISH...

The interaction was faster (lower latency).
A color-blind friendly color palette had been used.

WHAT IF?

One tried to visualize the data using a technique other than parallel coordinates? What encodings work best for the intended audience?

Instructions

1. Find your assigned team pairing.
2. Find assigned A3 submission: <http://github.com/CSE512-16S>
3. Read the submission, interact with the visualization.
4. Author a critique, noting both strengths & opportunities.
5. Post your comments to this discussion thread: Create a new top-level post, and prominently include the GitHub ids for the project you are reviewing.
6. Time permitting, repeat for another project of your choosing.

https://canvas.uw.edu/courses/1039479/discussion_topics/3332569

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