CSE 512 - Data Visualization

Design Critiques

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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
Visualizing Galaxy Merger Trees

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

Dominik Moritz et al. [EuroVis ’15]
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[paneIndex][0].dir]);

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)
    .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 Mathaus
- Daniel Marc Antoine Chardon
- Daniel Muller

TOP CITIES AND AUTHORS

<table>
<thead>
<tr>
<th>Letters received</th>
<th>Letters sent</th>
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<td>London England</td>
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<td>John Locke</td>
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<td>Joseph Addison</td>
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<td>Voltaire</td>
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<tr>
<td>Jonathan Swift</td>
<td>83 159</td>
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<tr>
<td>Alexander Pope</td>
<td>28 150</td>
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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

Proposal       Tues, May 12 (5pm)
Presentation   Thur, May 21 (slides: 5/20, 5pm)
Poster & Demo Mon, Jun 8 (5-8pm)
Final Paper    Thur, Jun 11 (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...
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

Volkswagen or Nissan or Jeep or Isuzu
Make: compact
Model: small
Protection: airbags
Doors: 4

Acura, Audi, BMW, Buick, Cadillac
Make: compact, light, medium, heavy
Model: small
Protection: airbags
Doors: 4

Source: The National Transportation Safety Administration
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?
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/CSE512-15S
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.
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