CSE 442 - Data Visualization

Design Review & Critique

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Final Project
Final Project

Produce **interactive web-based visualizations**

Initial **prototype** and **design review**

**Final deliverables** and **video presentation**

Submit and publish on GitHub

Projects from **previous classes** have been:

- Published as research papers
- Featured in the New York Times
- Released as successful open source projects
Final Project Theme

Data Visualization for Social Good

Goal: find data of social or scientific import, design visualizations to explore or communicate it effectively.

The specific data domain is open-ended. Possibilities include transportation, housing, public health, education, climate, campaign finance, scientific research, and so on…

You must identify a target audience. May be general (residents, voters) or specialized (scientists, policy makers).
Inspiration...
Change In Times (CSE 442, Spring 2017)
Gunnar Olson, Halden Lin, Lilian Liang, and Shobhit Hathi
Locations of each train on the red, blue, and orange lines at 5:46 am. Hover over the diagram to the right to display trains at a different time.

Trains are on the right side of the track relative to the direction they are moving.

See the morning rush-hour, midday lull, afternoon rush-hour, and the evening lull.

Service starts at 5AM on Monday morning. Each line represents the path of one train. Time continues downward, so steeper lines indicate slower trains.

Since the red line splits, we show the Ashmont branch first then the Braintree branch. Trains on the Braintree branch "jump over" the Ashmont branch.

Train frequency increases around 6:30AM as morning rush hour begins.
Visualizing Galaxy Merger Trees

S. Loebman, J. Ortiz, L. Orr, M. Balazinska, T. Quinn et al. [SIGMOD '14]
A browser-based tool for visualization and analysis of diffusion MRI data

Jason D. Yeatman, Adam Richie-Halford, Josh K. Smith, Anisha Keshavan & Ariel Rokem
Visualizing the Republic of Letters

Daniel Chang, Yuankai Ge, Shiwei Song

Republic of Letters

1700

FILTER BY AUTHOR
- Damien Desormes
- Daniel Cornabs
- Daniel de Pury
- Daniel Defoe
- Daniel Mathus
- Daniel Marc Antoine Chardon
- Daniel Moller

TOP CITIES AND AUTHORS

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Final Project Schedule

Proposal  Fri Nov 9
Milestone  Tue Nov 27
Reviews    Wed Nov 28, Fri Nov 30
Deliverables Thu Dec 6
Showcase   Fri Dec 7 (in class)

Logistics
Final project description posted online
Work in groups of up to 5 people
Start determining your project topic!
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, etc…).

**Seek feedback** (representative users, peers, …). Even informal usage can provide insights.

Choose **appropriate team roles**.

**Start early** (and read the suggested paper!)
Prototype Peer Critiques
Critique Questions

What is the purpose of the visualization? 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 understanding of the data? Is the design well-organized? Is it innovative? What would like to change or refine? 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?
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...
Data fields were configured to focus on the most relevant features. 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?
Critique Categories

Visualization Design
Choice of visual encodings (expressive, effective?)
Is the appropriate information visible by default?

Interaction Design
Choice of interaction techniques
Do they enhance understanding of the data?
Usability, discoverability, performance

Overall Design Quality
Organization, legibility, fitness for chosen goals