Visualization & Visual Analytics 1
Angus Forbes

creativecoding.evl.uic.edu/courses/cs424
What is this class about?

Information Visualization
Effective ways to interact with and represent different types of data – often involves designing new techniques that can be applied in many contexts

Visual Analytics
Effective use of visual interfaces to solve complex problems - often involves a combination of techniques specific to a particular industry or domain
Viega and Wattenberg, 2012
“Wind Map”
Holten, 2006  “Hierarchical Edge Bundling”
Shneiderman, 1992 “Treemaps”
Partl et al., 2014 “ConTour”
Dang & Forbes, 2016 “BioLinker”

Overview / Protein selector

Main view

Publication view

Context view

Conflict matrix
Interactive Infographics

- Generally static or have a limited set of interactions
- Often highlight particular elements to encode a specific narrative
- Normally utilize a minimalist palette in order to help the viewer focus on important concepts
Minard, 1869 “Napoleon's 1812 Invasion of Russia”
Nightengale, 1858  "Diagram of the Causes of Mortality in the Army..."
Parlapiano & Sanger-Katz, 2016
“Shifts in Power”

Any nominee more liberal than Justice Anthony M. Kennedy would make the court’s new median justice the most liberal in nearly 50 years. If Obama picks someone similar to his previous nominees, Justice Stephen G. Breyer would become the new median.
What will you learn?

Science

Data science: Extracting insight from data, especially “big data”

Scientific method: Observation, data collection, hypothesizing, experimenting, testing, analyzing, communicating

Engineering

Coding + software development, D3.js, Javascript, working in teams
What will you learn?

Visualization

- How to creatively and effectively choose visual encodings (color, shape, motion, etc.) for different types of data (tabular, network, textual, geographic, temporal, etc.);
- How to develop tools to support a range of visualization tasks (analysis, annotation, exploration, comparison, etc.);
- How to think of visualization projects in terms of the larger context of the needs and goals of the intended audience
How will you learn?

Projects & Presentations

P1, “Quantified Self” – Test out different visual techniques for a (relatively) straightforward dataset - Individual project

P2, “Integrated Datasets” – Explore how to integrate multiple techniques to find relationships between data from multiple datasets – Group project

P3, “Unsolved Problems” – Develop new techniques to represent complex data to solve complex problems – Group project
How will you learn?

Assignments & Quizzes
Read textbook and articles + study contemporary programming techniques for information visualization

Participation
Learn from and teach each other; make sure you understand the material; find ways to make the material meaningful to you
Homework for Thursday

- Bring in an example of a data visualization that you have seen that you like. Be ready to explain to your classmates what you find to be interesting about it.