Information Visualization

Intro

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3 January 2017

http://www.cs.ubc.ca/~tmm/courses/547-17

Audience

- no prerequisites
  - many areas helpful but not required
    - human-computer interaction, computer graphics, cognitive psychology, graphic design, algorithms, machine learning, statistics, ...
- open to non-CS people
  - if no programming background, can do analysis or survey project
- open to advanced undergrads
  - talk to me
- open to informal auditors
  - some or all days of readings/discussion, as you like
    - you'll get out of it what you put into it...

Class time

- weeks 1-9: Participation [30%]
  - before class:
    - you read chapter, sometimes also paper
    - you submit comments before class
  - during class:
    - sometimes I lecture briefly and we discuss
    - sometimes in-class group work
    - Jan 24 is TBD (possibility that class cancelled)
- weeks 10-13: Presentations [20%]
  - before one of the classes: you each read paper on topic of your choice
  - during that class: you present it to everybody else (~10 min)

Readings

- textbook
  - Tamara Munzner. Visualization Analysis and Design. AK Peters Visualization Series. CRC Press, 2014.
    - http://www.cs.ubc.ca/~tmm/vadbook/
  - library has multiple ebook copies
  - to buy yourself, cheapest is amazon.com

- papers
  - links posted on course page
  - if DL links, use library EZproxy from off campus

- readings posted by one week before class

- each session: always one chapter, sometimes one more paper

Participation [30%]

- written comments on reading in advance (18% of total mark)
  - due 1:30pm (2 hrs before class)
  - 1 for each reading
  - bring printout or laptop with you, springboard for discussion
- discussion/participation in class (12% of total mark)
- attendance expected
  - tell me in advance if you'll miss class (and why)
  - question credit still possible if submitted in advance
  - tell when you recover if you were ill

Reading comments

- comments or questions
- fine to be less formal than written report
  - correct grammar and spelling still expected
  - be concise: a few sentences is good, one paragraph max!
- should be thoughtful, show you've read and reflected
  - poor to ask something trivial to look up
  - ok to ask for clarification of genuinely confusing section
  - good to show that you're thinking carefully about what you read
  - great to point out something that I haven't seen before
- examples on http://www.cs.ubc.ca/~tmm/courses/infovis/structure.html

Projects [50%]

- solo, or group of 2, or group of 3
  - groups highly encouraged; amount of work commensurate with group size
- stages
  - pitches (oral, in class): Thu, Feb 16
  - meetings (individual, outside class): through Fri, Mar 3, 5pm
  - proposals (written): Mon, Mar 6, 5pm
  - peer project reviews (in class): Mar 21, Apr 4
  - interim writeup including related work (written): Mar 31, 5pm
  - final presentations (oral): Apr 25 1-5pm
  - final reports (written): Apr 28, 5pm
- resources
  - more on datasets and tools later

Projects

- programming
  - common case
  - *note that I will only consider supervising students who do programming projects*
  - three types
    - problem-driven design studies (target specific task/data)
    - technique-driven (explore design choice space for encoding or interaction idiom)
    - algorithm implementation (as described in previous paper)

- analysis
  - use existing tools on dataset
  - detailed domain survey
  - particularly suitable for non-CS students

- survey
  - very detailed domain survey
  - particularly suitable for non-CS students

Projects: Design studies

- BYOD (Bring Your Own Data)
  - you have your own data to analyze
  - your thesis/research topic (very common case)
  - dovetail with another course (sometime possible but timing can be difficult)
- FDOI (Find Data Of Interest)
  - many existing datasets, see resource page to get started
    - http://www.cs.ubc.ca/group/infovis/resources.shtml

Presentations [20%]

- last several weeks of class
- present, analyze, and critique one paper
  - send me topic choices by Feb 17, I will assign papers accordingly
- expectations
  - slides required
  - summary/description important, but also your own thoughts
    - analysis according to book framework
    - critique of strengths and weaknesses
- timing
  - exact times TBD depending on enrollment
  - likely around 10 minutes each
- topics at http://www.cs.ubc.ca/~tmm/courses/infovis/presentations.html

Marking

- 50% Project
  - 2% Pitches
  - 10% Proposal
  - 4% Interim Writeups
  - 4% Project Peer Reviews
  - 12% Final Presentation
  - 18% Final Report
  - 50% Content
- 20% Presentations
  - 75% Content: Summary 50%, Analysis 25%, Critique 25%
  - 25% Delivery: Presentation Style 50%, Slide Quality 50%
- 30% Participation
  - 60% Written Questions
  - 40% In-Class Discussion/Exercises

- marking by buckets
  - great 100%
  - good 89%
  - ok 78%
  - poor 67%
  - zero 0%

Course goals

- twofold goal
  - specific: teach you some infovis
  - generic: teach you how to be a better researcher
- feedback through detailed written comments on writing and presenting
  - both content and style
  - at level of paper review for your final project
  - goal: within a week or so
- fast marking for reading questions
  - great/good/ok/poor/zero
  - goal: turn around before next class
    - one week at most

Finding me

- email is the best way to reach me: tmm@cs.ubc.ca
- office hours Tue right after class (5-6pm)
  - or by appointment
- X661 (X-Wing of ICICS/CS bldg)

- course page is font of all information
  - don't forget to refresh, frequent updates
  - http://www.cs.ubc.ca/~tmm/courses/547-17

Now: In-class design exercise, in small groups

- Five time-series scenarios
  - A: every 5 min, duration 1 year, 1 thing: building occupancy rates
  - B: every 5 min, 1 year, 2 things: currency values (exchange rate)
  - C: several years and several things: 5 years, 10 currencies
  - D: 1 year, many things: CPU load across 1000 machines
  - E: 1 year, several parameters, many things: 10 params on each of 1000 machines
- Small-group exercise: 15-20 min
  - one group per table (4-5 people/group)
  - discuss/sketch possible visual encodings appropriate for your assigned scenario
- Reportback: 20-30 min
  - 3 min from each group
- Design space examples/discussion: 15-20 min

Next Time

- to read
  - VAD book, Ch 1: What's Vis, and Why Do It?
  - VAD book, Ch 2: What: Data Abstraction