Information Visualization

Lecture 1 CPSC 533C, Fall 2004
13 September 2004
Tamara Munzner

Outline

My History
Course Structure

The Geometry Center

1991–1995 Technical Staff

The National Science and Technology Center for Computation and Visualization of Geometric Structures

mathematical (geometry and topology) visualization

GC: General-purpose visualization

Geomview
- very flexible, several thousand users in many domains
- supports nonEuclidean spaces, higher dimensions

www.geom.umn.edu/software/geomview

Geomview

GC: Visualization videos

explain advanced topology to general audience

Outside In

The Shape of Space

Thesis: Interactive Navigation of Large Graphs and Networks

1995–2000 PhD Stanford

H3
Planet Multicast
Constellation

Munzner 1997, 1998a, 1998b
Munzner, Huffman, Claffy, and Ferrier 1996
Munzner, Gaalman, and Roebertson 1999
Microsoft Research
SGI: Site Manager

- Site content management tool
- H3 view of site hyperlink structure
- Shipped from Irix 6.2 on

[www.sgi.com/software/sitemgr.html]

Compaq Systems Research Center

- 2000–2002, Research Scientist
- TreeJuxtaposer
  - Visual comparison of large evolutionary trees

[Munster, Guimbretiere, Zhang, Tasiran, and Zhou. 2003]
[Slack, Munster 2003]

Current Infovis Research

- Domains
  - Evolutionary trees
  - Genomic sequences
  - Transaction logs
  - Environmental sustainability
  - Power grid control
  - Computer security

- Techniques
  - Accordion drawing
  - Multidimensional scaling
  - Scalable graph drawing

InfoVis Symposium organization
- Program Co-Chair 2003, 2004
- Posters Co-Chair 2001, 2002

Course Structure

- First part
  - Professor lectures
  - All ds core readings

- Second part
  - Student presentations
  - Presenter does topic readings

- Requirements
  - Project: 50%
  - Presentation: 25%
  - Small assignment: 5%
  - Class participation: 20%

Projects

- Choice 1: Programming
  - Like last year
  - I will only consider supervising students who do programming projects

- Choice 2: Analysis
  - Use existing tools on dataset
  - Detailed domain survey
  - Suitable for non-CS students

- Stages
  - Meeting with me in person
  - Proposal Nov 5
  - Update presentations Nov 17, 22
  - Final report/presentation Dec 15

Presentations

- Second half of class
- Sign up by Oct 19

Material
- 2 papers from my suggestions
- 1 paper found on your own

Talk
- Slides required
- Critical points of papers
- Comparison and critique
- Not just outline!
Participation
10%: discussions in class
  • both lectures and student presentations
10%: 5 questions on required readings
  • due at beginning of class
  • if you can't attend: email required “before” class

Required Books
Ware
Information Visualization: Perception for Design
  • 2nd edition
Tufte
Envisioning Information

Reserve Books
Information Visualization: Perception for Design, Colin Ware
Readings in Information Visualization: Using Vision To Think, Card, Mackinlay, and Shneiderman, eds; Morgan Kaufmann 1999.
The Visualization Toolkit, 2nd edition; Schroeder, Martin and Lorensen, Prentice Hall 1998

Assignment 1
find and critique two images
  • one good visualization
  • one bad visualization
make web page, send me URL by noon Wed
  • pictures, two paragraphs for each
  • first para: story
  • second para: specific critique
    accessibility
    clarity
    accuracy
    other important design criteria
be prepared to discuss for 3–4 minutes in class

Assignment 1
sources
  • textbook
  • journal
    Journal of Applied Optics, ...
  • science magazine
    Nature, Science, Scientific American, ...
  • news magazine or newspaper
    Newsweek, Economist, NY Times, USA Today, ...
domains
  • mathematics
  • physical sciences
    astronomy, physics, chemistry, ...
  • biological sciences
  • ecology, medicine, bioinformatics, ...
  • social sciences
    economics, crime statistics, ...

Lecture Topics
Design Studies

Evaluation
Guest Lecturer: Melanie Tory

Frameworks/Models

Perception

Color

Space/Order
Scientific Visualization

Guest Lecturer: Melanie Tory

Course Home Page

permanent URL
- www.cs.ubc.ca/~tmm/courses/cpsc533c-04-fall

shortcut
- www.cs.ubc.ca/~tmm/courses/533

reload frequently, updates common!