Overview for today

- course structure
- introductions
- discussion - definition of information visualization
- course outline
CPSC 599.28/601.28: course structure

• Details
  when:  Tuesday & Thursday 9:30 am to 10:45 am
  place:  MS680A
  format:  seminar

• Evaluation
  class work  25%
  Assignment #1  15%
  Assignment #1  20%
  Assignment #1  40%
  For grad students only: above reduced to 80%
  plus topic paper  20%

• Contact information
  sheelagh@ucalgary.ca
  220-6055
  office MS680J or iLab MS680

• Office hours
  Tuesday and Thursday 3:30 to 4:30
  by email any time
  by appointment: email or phone to arrange one
  drop in for urgent requests (but no guarantees!)

In class exercises

Purpose:
• develop representation mapping skills
• create and recognize useful information visualizations

Evaluation:
• 5 of these exercises worth 5% each for a total of 25% of your course mark.
• Each exercise will have 2 parts.
  – Part 1 (innovation part): worth 2% each (total 10% for all 5 of these in the term)
  – Part 2 (review skills, the ‘crit’): worth 3% each (total 15% for all 5 of these in the term)
In class exercises

Structure:
• Part 1 (innovation part):
  – creation in class of a visual representation of small data set
  – full marks will be awarded for doing this exercise
  – encourage creation, innovation, risk taking – ‘just do it’
  – sketches will be handed in at the end of class and photographed to create a record
  – like a quiz in that you must be present and take part
  – not like a quiz in that you do not have to memorize facts
• Part 2 (review skills, the ‘crit’):
  – short 1 to max 2 page review a sketch that is not your own
  – hand in at the beginning of the next class
  – sometimes using specific criteria that have been taught in class
  – for all you will discuss both the positive and negative aspects of the sketch and make suggestions for improvements

Assignments

• Assignment #1
  • Nested hierarchical diagrams

• Assignment #2
  • Navigating, interaction with large 2D spaces.
  • Built on top of Assignment #1

• Assignment #3
  • You will be given access to data and asked to create an interactive information visualization.

Language: Processing
• Introduction tutorial Tuesday Jan 22nd in class
• open source programming language
• Web site: http://processing.org/
• Book: http://www.oreilly.com/catalog/9780596514556/toc.html
Why do Information Visualization?

Mis-interpretation is common
Snow, John. On the Mode of regression line: \( Y = 3 + 0.5X \)
r squared: 0.7
Correlation coefficient: 0.8
Residual sum of squares of \( Y \): 13.8
Regression sum of squares: 27.5
Sum of squares: 110.0
Standard error of slope estimate: 0.1
Mean \( Y \)'s: 7.5
\( N \): 11.0

Anscombe's Quartet

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Residual sum of squares of \( Y \): 13.8
Correlation coefficient: 0.8
\( r \) squared: 0.7
Regression line: \( Y = 3 + 0.5X \)

John Snow 1854

- Discovered cause of a cholera epidemic through visualizing the data in conjunction with a map

Influencing Hospital Management

Florence Nightingale
English nurse, 1858

The angles of the blue, red, and black wedges are each measured from the center on the circular sectors.
The blue wedges measured from the center on the circular sectors.

Florence Nightingale, Notes on Matters Affecting the Health, Efficiency and Hospital Administration of the British Army (1858)

C. J. Minard, French engineer, 1851
Combined statistical diagrams and maps
Diagrams of Motion

- Using white tape and black velvet, Marey created time series images.
- E. J. Marey, (1830 – 1904)


Course outline

- Week 1
  - Tuesday: Introduction
  - Thursday: Exercise #1

- Week 2
  - Tuesday: Processing tutorial
  - Tuesday: Hand in Exercise #1 Crit
  - Tuesday: Hand out Assignment #1
  - Thursday: Introduction to navigation

- Week 3
  - Tuesday: Interaction, context, filtering
  - Thursday: Distortion / generalization
Course outline

- Week 4
  - Tuesday: Hand in Assignment #1
  - Tuesday: Hand out Assignment #2
  - Tuesday: occlusion, magic lenses
  - Thursday: basic representation theory
- Week 5
  - Tuesday: Exercise #2
  - Thursday: Hand in Exercise #2 Crit
  - Thursday: state of the art GeoVis
  - Thursday: Hand out Assignment #3

- Reading Week

Course outline

- Week 6
  - Tuesday: Hand in Assignment #2
  - Tuesday: cognitive science in information visualization
  - Thursday: applying cognitive science, visual cues, gestalt

- Week 7
  - Tuesday: Exercise #3
  - Thursday: Hand in Exercise #3 Crit
  - Thursday: state of the art Social Vis

- Week 8
  - Tuesday: 1D data / 1D representations
  - Thursday: 2D data / 2D representations
Course outline

• Week 9
  • Tuesday: Exercise #4
  • Thursday: Hand in Exercise #4 Crit
  • Thursday: state of the art Linguistic Vis

• Week 10
  • Tuesday: 3D data / 3D representations
  • Thursday: MD data / MD representations
  • Thursday: Hand in Grad Topic Papers

• Week 11
  • Tuesday: grad topic presentations
  • Thursday: grad topic presentations

Course outline

• Week 12
  • Tuesday: TBA (visualizing uncertainty)
  • Thursday: TBA (evaluation)

• Week 13
  • Tuesday: Exercise #5
  • Thursday: Hand in Exercise #5 Crit
  • Thursday: state of the art BioVis Vis

• To schedule before April 28th
  • Presentation and demos of Assignment #3
Keeping a Visual Journal

Highly recommended!!

• Sketch: ideas, data, concepts
• Collect
  • images that others have created for information visualization and/or visual communication in general
  • chosen because you liked/disliked them or because you can not figure out someone else’s reaction
• React
  • why and which parts you like or dislike
  • annotate your images, draw on them, write on them, look at them in different scales
  • which parts might you use yourself, as is, with changes, or never!
• Generate
  • keeping track of your developing ideas
  • including, scribbles, sketches, math, and words