Data visualization (COSC 480B)

Schedule: MW 14:45-16:00

Homeworks:

1) Project proposal in a page (September 10)
2) Create a simple interface that has input area, some control button, a viewing window, and an output area (September 24)
3) Implement dot plots, line plots, box plots in javascript (October 8)
4) Given a text dataset, parse it and visualize it (October 22)
5) Implement a simple interface where user will be able to draw lines, points and determine line intersection (November 5)
6) Implement a force directed algorithm or stress minimization (November 19)
7) Final project: read some paper on a topic, summarize them, suggest future ideas (December 3)

Lectures:

1) Overview + projects (August 26):
    a) Force directed algorithm
    b) Stress optimization
    c) Other optimization
    d) Using map to visualize networks
    e) Multi-level visualization
    f) Application of neural networks
    g) Dynamic network visualization
2) HTML (August 30):
    a) Basics
    b) Forms
    c) Graphics
    d) Media
    e) APIs
3) CSS Basics (September 1)
4) CSS (September 6)
    a) Advanced
    b) Responsive
    c) Grid
5) Bootstrap Basics (September 8)
6) Bootstrap (September 13)
    a) Grids
    b) Themes
    c) Web design tools
7) Javascript (September 15)
    a) Syntex
    b) Variables

    c) Strings
    d) String operations
8) Javascript (September 20)
    a) Arrays
    b) Loops
    c) Switch
    d) Debugging
9) Javascript (September 22)
    a) Objects
    b) Functions
    c) Classes
    d) Async
10) Javascript (September 27)
    a) HTML DOM
    b) Browser BOM
    c) Web APIs
11) Javascript (September 29)
    a) AJAX
    b) JSON
    c) jQuery
12) Matplotlib (October 4)
13) Seaborn (October 6)
    a) Line charts
    b) Bar charts
    c) Heatmaps
    d) Scatter plot
    e) Distribution
    f) Customization
14) D3 basics (October 13)
15) D3 joins and scales (October 18)
16) Text data analysis (October 20)
    a) Creating, reading and writing
    b) Indexing, selecting and assigning
    c) Summary functions and maps
17) Text data analysis (October 25)
    a) Grouping and sorting
    b) Data types and missing values
    c) Renaming and combining
18) Data visualization principles (October 27)
    a) The door study
    b) Some good examples
    c) Color
19) Network/graph basics (November 1)
20) Network sparsification (November 3)

21) Traditional graph drawing algorithms (November 8)
22) Force-directed algorithms (November 10)
23) Stress optimization (November 15)
24) Crossing minimization using stress (November 17)
25) Different aesthetic criteria (November 22)
26) Map visualization (November 24)
27) Multi-level visualization (November 29)
28) Symmetry detection (December 1)
29) Dynamic tree visualization (December 6)
30) Student presentation (December 8)