COM3571 Data Visualization

Syllabus

Prof. Van Kelly
Office: Belfer 506
Yeshiva College Spring 2017

Organization

Class Web page: using Canvas

Lecture and Lab: Friday, 10:00AM-12:30PM, Belfer 430

Office Hours:

- MW 12:00-2:00 *walk-in*, no appointment, first-come first-served
- Wednesday evening 6:00-7:00 *by appointment (make appointments via email)*,
- Friday 1:00-2:00 by appointment,
- Late weekday evening virtual office hours *by appointment* on Skype/Hangouts

Course Objectives

Visualization is increasingly important in this era where the use of data is growing in many different fields. Data visualization techniques allow people to use their perception to better understand this data. The goal of this course is to introduce students to data visualization including both the principles and techniques. Students will learn the value of visualization, specific techniques in information visualization and scientific visualization, and how understand how to best leverage visualization methods.

Specific Objectives

- Develop skills to both design and critique visualizations
- Understand why visualization is an important part of data analysis
- Understand the components involved in visualization design
- Understand the type of data impacts the type of visualization

Learning Outcomes

- Students will be able to prepare data for visualization
- Students will be able to design visualizations
- Students will be able to use web technology to create visualizations

Course Prerequisites

Students should have taken at least one course in algorithms and data structures. Familiarity with Web technologies and JavaScript on the level of COM3780 is also necessary. While computer graphics is not required, it is useful background.

Textbooks

The primary textbook for the course is:

> Tamara Munzner, *Visualization Analysis and Design*, AK Peters Visualization Series, CRC Press, Nov. 2014, ISBN 978-1466508910

To cover the programming aspects of this course, the following book is required:

> Scott Murray, Interactive Data Visualization for the Web, O'Reilly 2013, ISBN 978-1449339739, also available online (free) at http://chimera.labs.oreilly.com/books/1230000000345/index.html

Course Content

The course content consists of lectures, exams, readings, assigned individual projects, and a class group project.

Schedule

The schedule posted on Canvas is subject to change, although exam dates are not expected to change. Please check Canvas for the latest assignments and readings.

Exams

Both a midterm and final exam will be given in this course. The final will be cumulative with an emphasis on the concepts covered since the midterm exam. The midterm exam can only be made up in case of a **documented emergency**. Valid documentation includes notes from a doctor or a nurse, though not for a scheduled appointment; evidence of jury duty or of court appearance; evidence of military obligations. Notes from relatives do not constitute valid documentation, nor does proof of travel arrangements. Other kinds of documentation may be considered valid (or not) at the professor's discretion. A make-up exam for the final requires permission of the Dean.

Individual Assignments

There will be assignments throughout the course to help concretize the concepts being discussed in lectures. They will be announced both in class and on Canvas. Assignments are due at the time specified; late assignments will not be accepted. If you are seriously ill or have a family emergency **before** the assignment is due, please let me know as soon as possible so we can make necessary arrangements. Do not notify me after the assignment is due!

Class Project

We expect to be given a large set of "virgin" (never before analyzed) data from an outside collaborator. We will work with him over the second half of the course to analyze the data and produce compelling visualizations that tell important stories latent within the data.

Grading

- 25% Course Participation and Class Project
- 35% Individual Assignments
- 20% Midterm Exam
- 20% Final Exam

Course Technologies

The course will use the d3.js JavaScript library (and JavaScript) for most projects, but students will also be introduced to other tools including Excel, Processing, Bokeh, Tableau, VTK, and ParaView.

Attendance Policy

You are strongly encouraged to attend all lectures. If you miss a lecture, it is your responsibility to find some way to learn the material covered during that class. In addition, your participation in class is part of your grade.

Syllabus Change Policy

Except for changes that substantially affect the evaluation (grading) of the course, this syllabus is a guide for the course and is subject to change. Please refer to Canvas for the most current information.

Academic Honesty Policy

All YU students are expected to maintain high standards of academic integrity and scholarly practice. The University does not tolerate academic dishonesty of any variety, whether as a result of failure to understand required academic and scholarly procedure or as an act of intentional dishonesty. A student found responsible of academic dishonesty is liable for severe disciplinary action, which may include dismissal from the University. Refer to YU Student for due process.

Students must complete their **own** work unless working on an assigned **group project**. They must not use work from another source (e.g. another student, a book or other published document, or a website). This includes your own work; if you wrote code for another project that you are using in this course, you must acknowledge that. You must explicitly acknowledge anything that you did not write yourself for this course. Again, the penalty for not doing so will be documented by the university and consequences range from a zero on the assignment to potential dismissal from the university.

Lecture Etiquette

You may not record lectures without the instructor's permission. Snapping still pictures (e.g., to capture whiteboard images) is fine, but any recording of audio or video requires a release from YU and from all class participants.

Please do not cause distractions that detract from your fellow students' learning. Cell phones and other electronic devices should be silent; if there is an emergency and you need to communicate with someone, please step out of the classroom. You may use electronic devices for note-taking, but please note that not participating in lectures (e.g. working on another assignment during lecture) will affect the class participation portion of your grade.

Accommodation Policy

Students with disabilities who are enrolled in this course and who will be requesting documented disability-related accommodations should make an appointment with the Office of Disability Services, (646) 592-4280, akelsen@yu.edu during the first week of class. Once you have been approved for accommodations, please submit your accommodation letter to ensure the successful implementation of those accommodations.