ARTG5330 Visualization Technologies
Instructor Siqi Zhu
Class 1:35PM — 5:05PM   Fri   Ryder Hall 301

Description

This class will introduce students to the principles and techniques of visualizing information on the web, and simultaneously serve as an introduction to programming for the web. Using Ben Fry's information visualization pipeline as a foundational framework, students will acquire both the conceptual mindset and practical skills for developing creative solutions to complex data visualization problems.

Students will gain significant hands-on experience with front-end web development, particularly the d3.js Javascript library. With a series of in-class exercises and assignments, students will become familiar with d3's functionalities and understand how they address long-standing data visualization problems. At the end of the course, students are encouraged to creatively synthesize their skills by developing a personal data visualization project.

Objectives

- Learn the fundamental concepts and principles of data visualization for the web;
- Become familiar with the front-end web development environment;
- Develop practical facility with the d3.js JavaScript library, and understand how it addresses long-standing data visualization problems;
- Learn to conceptualize, explore, and develop creative solutions to data visualization problems through self-directed research.

Tool Requirements

- We'll use extensive use of JavaScript libraries, all of which are open source.
- For front-end web development, you may use any IDE of your choice, such as Sublime Text or Atom.
- You are required to sign up for an account on GitHub (http://github.com) and encouraged to become familiar with the Git workflow.
- You will need to install Git (http://git-scm.com/) and Python (https://www.python.org/) on your computer before the start of the class.

Course Resources

Course Github repo: github.com/siqister/artg-fall-2018

Repository for all code, lectures, and supplementary material.

Slack channel: https://northeasternidv.slack.com

For important course announcements, virtual office hours, and collaboration between students. Weekly reading list will be posted in the Slack channel.

Office hours

You will have approximately 20-30 minutes of time each week with the course instructor or TA to discuss issues related to class material and the assignments. Sign-up sheets will be posted.

Rules and Regulation

Attendance: you are expected to attend every class; missed classes will mean that you will miss valuable information. Unexcused absences can affect your grade.

Reading assignments: there will be regular reading assignments over the course of the semester, made available through the course website listed above.You are expected to complete this reading (especially the important supplementary material) in order to actively participate in class.

Integrity: you are requested to abide by Northeastern University's Academic Integrity Policy, which you can read at: http://www.northeastern.edu/osccr/academicintegrity/

Grading and Rubric

The final grade for the class will take into account in-class participation, weekly assignments, and a final project.

Participation in in-class activities: in-class "finger exercises" are vital to your learning process, and your participation in them constitute an important part of your grade. In order to make these productive, it is important that you complete any assigned readings before coming to class.

Assignments: an assignment will accompany most classes. These are designed to be completely relatively quickly, and are essential for testing and reinforcing your understanding of the course material. Collaborative problem-solving is encouraged, as is bringing any issues and questions to class and office hours.

Final project: the final project is an opportunity for self-directed, creative problem-solving that synthesizes all the skills acquired during the semester. You are highly encouraged to work from a common dataset to be provided by the instructor, but are permitted to work on your dataset with instructor permission.

Participation	10%
Assignments	60%
Final project	30%

Weekly Schedule

Week 1 / Sep 7 Setting up the Development Environment **(No Class)**
   No class, but you are required to complete the assignment prior to Sep 14

Week 2 / Sep 14 Introduction to HTML, CSS, and the Document Object Model

Week 3 / Sep 21 Introduction to Javascript

Week 4 / Sep 28 Introduction to d3.js

Week 5 / Oct 5 Data Structures in Depth **(No Class)**
   No class, but you are required to work through a guided assignment prior to Oct 12

Week 6 / Oct 12 First Complete Data Visualization; Data Joining

Week 7 / Oct 19 Data Joining In Depth; the General Update Pattern

Week 8 / Oct 28 Drawing Complex Shapes: Layout and Generators

Week 9 / Nov 2 Data Transformation and Layout; Intro to Interactions

Week 10 / Nov 9 Hierarchical Data; More on Interactions

Week 11 / Nov 16 Spatial Data

Week 12 / Nov 23 Day after Thanksgiving **(No Class)**

Week 13 / Nov 30 Review and Q&A; Tooling Session for Final Project **(Remote)**

Week 14 / Dec 7 Final Review