Course Syllabus for SIADS 622:Information Visualization II

Course Overview and Prerequisites

This course extends our understanding of information visualization. Leveraging the topics covered in Information Visualization I, we introduce interactive techniques that can be used broadly for visualization. The course will also introduce techniques for visualizing specific data types: temporal, network, hierarchical, and text.

Information visualization is a crucial step in both understanding and communicating data. In the first Information Visualization course we focused on the fundamental principles behind visualization--the most basic types of data, encodings, and the perceptual and cognitive processes that make some visualizations better than others. This class will expand on these basic principles to include interactivity. We will see how interactivity can act as a boost to expressiveness and effectiveness by studying a handful of common cross-cutting techniques. The class will also expand on the basic data types to feature techniques for visualizing multivariate datasets, temporal data, network, hierarchical, and text. We will focus on general techniques but also focus on specific real-world case studies for each type. Beyond the theoretical, the course will allow students to build on their Altair expertise to build more sophisticated and interactive visualizations. We will also introduce other libraries as needed for the more rarified data types (e.g., NetworkX).

Students should have successfully completed Information Visualization I prior to enrolling in this course.

Instructor and Course Assistants

- Instructor: Eytan Adar - eadar@umich.edu
- Course Assistants:
    - Elham Amini -eamini@umich.edu
    - Jake Huang -yiju@umich.edu

Communication Expectations

Contacting instructor and course assistant: Course channel in Slack
Email response time: 24 - 48 hours
Slack response time: 24 - 48 hours
Office hours: see Course Schedule below

Required Textbook

Visual Display of Quantitative Information. Edward. R. Tufte. One source for this text is Amazon: https://www.amazon.com/Visual-Display-Quantitative-Information/dp/1930824130)

Technology Requirements (unique to this course)

None

Learning Outcomes

1. Enumerate the key types of interactivity and their advantages
2. Be able to construct interactive visualizations using Altair
3. Be able to evaluate visualization systems and encodings based on an extended understanding of data types
4. Be able to critique and contrast different designs based on task frameworks (domain, abstract) for temporal/network/hierarchical/text/multivariate data formats
5. Be able to select appropriate encodings given data and task framework given temporal/network/hierarchical/text/multivariate data formats

Course Schedule

This course begins on Wednesday, March 31st and ends on Tuesday April 27, 2021.
Weekly assignments will be due on Tuesdays at 11:59 pm (time zone = Ann Arbor, Michigan - Eastern Standard Time).

Schedule of Weekly Office Hours via Zoom (time zone = Ann Arbor, Michigan - Eastern Standard Time):
- Eytan - Fridays 3-4pm
- Elham Amini - Tuesdays 7-8pm
- Jake Huang - Sundays 4-5pm

Grading

Course Assignment	Percentage of Final Grade
Week 1 Assignment	25%
Week 2 Assignment	25%
Week 3 Assignment	25%
Week 4 Assignment	25%
	100%

Note: All assignments are required to earn credit for this course.

Letter Grades, Course Grades, and Late Submission Policy

Refer to the MADS Assignment Submission and Grading Policies section of the UMSI Student Handbook (access to Student Orientation course required)

For this course, assignments will be accepted 24 hours late with a 20% penalty. After 24 hours we will not accept your assignments unless you have prior approval for an extension (rarely given).

Also, please note that we do not autograde in this course. We provide either an example of the output or the specific visualization for you to replicate. Because we can't autograde this (we need to look at the visualizations) this course is manually graded.

We apply the following for letter grade determination. Please note that we rarely give A+'s in this course.:

Letter Grade	Score Range
A	>93
A-	90-93
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	73-76
C-	70-72
D+	67-69
D	63-66
D-	60-62
F	<60

Academic Integrity/Code of Conduct

Refer to the Academic and Professional Integrity section of the UMSI Student Handbook. (access to Student Orientation course required).

Accommodations

Refer to the Accommodations for Students with Disabilities section of the UMSI Student Handbook (access to the Student Orientation course required). Use the Student Intake Form to begin the process of working with the University's Office of Services for Students with Disabilities.

Accessibility

Refer to the Screen reader configuration for Jupyter Notebook Content document to learn accessibility tips for Jupyter Notebooks.

Library Access

Refer to the [U-M Library's information sheet](#) on accessing library resources from off-campus. For more information regarding library support services, please refer to the [U-M Library Resources](#) section of the UMSI Student Handbook (access to the Student Orientation course required).

Student Mental Health

Refer to the University's [Resources for Stress and Mental Health website](#) for a listing of resources for students.

Student Services

Refer to the [Introduction to UMSI Student Life](#) section of the UMSI Student Handbook (access to the Student Orientation course required).

Technology Tips

- Recommended Technology
  - This program requires Jupyter Notebook for completion of problem sets and Adobe or other PDF viewer for reading articles.
- Working Offline
  - While the Coursera platform has an integrated Jupyter Notebook system, you can work offline on your own computer by installing Python 3.7+ and the Jupyter software packages, including Pandas, Altair, networkx, nx-altair, squarify, scikit-learn. For more details, consult the Jupyter Notebook FAQ.