COSC 322 Data Visualization Spring 2021

Final project: The final project allows you to explore a particular area of Data Visualization of interest to you in more depth than you would get in the class. More importantly, the way you communicate in both written/visual and spoken form has a direct impact on your ability to advance in your career. You may study any topic relevant to visualization in the field of Data Science, provided the project includes a source of data that you import, clean, transform, explore and communicate results via visualizations and written form. Your project may take one of two forms:

1. Survey Paper with Graphics. This paper will review the work of others in a particular area. As opposed to simply describing the work of two or more others, however, your paper should compare and contrast the different approaches. You should also *clearly state your own conclusions as to which approach is better* and *attempt an implementation of the approach*. **A survey paper requires several references!**

2. Research Project Report with Graphics. You may also conduct your own research project with data you collect or with data from outside sources. The project need not be lengthy but should be clearly motivated and complete. Projects may be conducted using analysis, simulation, and/or experiments. Your paper will be a report on this project and will include code you wrote or results/output gathered. In addition to describing your own work, you must demonstrate familiarity with other work in the area via a literature review. Papers of this type will have a more limited literature review section, since much of the work for this option will be in the development of the project.

In either case, interactive graphics are preferred. **You should think of this as an opportunity to create something for a portfolio that shows your skills to others** (future employers or graduate school admissions).

Your paper must be self-contained and should include a short abstract and a list of references. If you are not familiar with the format of technical papers, read any journal articles in IEEE Transactions series or journal publications from the ACM. Be sure to properly cite all your sources. Plagiarism is strictly forbidden and will result in a grade of 0 for the project. The paper should be long enough to say what you want to say, and the format must be double-spaced, 12-point type. Typically your paper would be 10-12 pages in length; project reports are typically shorter but have listings of results and code written as appendices.

Most of your references will come from technical journals, conference proceedings, and individual technical reports from institutions. Journal papers are usually two or three years old due to the long reviewing process. However, the quality of journal articles is usually higher than conference papers or technical reports. You should always be a critical reader. Don't be easily convinced by conclusions or comments of the author(s)! Just because the paper is published does not guarantee that the arguments presented therein are correct. You must make your own assessment. Except for seminal papers on various subjects, I would expect most of your references to be within the last five years. Older papers have likely been made obsolete by

more recent research. You will find more cutting edge reports in more technical publications, such as IEEE Computer, IEEE Trans. on Computers, and ACM Transactions on Computer Systems. You can get virtually any publication through our library's interlibrary loan process. Blogs and unrefereed opinions from websites may be cited with an access date, but do NOT add to your count of references!

In addition to the paper, you will give a brief, 10 - 15 minute presentation on your topic to the class during the last class period of the semester.

Final Project Timeline:

- Final project proposal
    - The project proposal is a description of what you intended to do, what data you will use, and what the planned end result is. <u>You will turn in an initial draft on this to me, and we will negotiate a project scope and deliverable on the following timeline:</u>

        - Drafts due Monday, March 1st: 25 pts
        - Final proposals due Friday March 12th: <u>50 pts</u>

          Total proposal pts: 75 pts

- Final Project Paper & application/graphics 200 pts
- Final Project Presentation 75 pts

Recall there is no final in this course.

I encourage you to consider submitting your project to Augustana University's *Arthur Olsen Student Research Symposium*, to be held Thursday and Friday, April 29th and 30th, 2021. Proposals are due to that call on (or about -- still tbd) March 24, 2021. Projects presented there will not be required to present during class sessions.

These are Individual projects; no group work.