DATA 31500 Autumn 2024

Project Proposal

Due October 18, 2024

The project requires students to use visualization and/or web technology in the production of original data science research. The purpose of the project is to put the skills and knowledge gained in this course into action to advance the student's research interests. It is best if the project is agreed upon and planned in coordination with the student's advisor, such that the work produced can become publishable scholarship in the student's intended area of research.

Possible high-level project ideas include *but are not limited to*:

1. Build a custom data collection interface using web technology
2. Create public-facing data story, explorable explanation, or dashboard
3. Prototype a data-driven system or a design probe for user testing
4. Use visualization to advance scientific understanding of a complex dataset

Regardless of which option they take, students need to be clear about how visualization and/or interactive web technology was instrumental to advancing their research. All projects must be approved by the instuctor through the proposal process outlined in this document.

The proposal itself is a 2-page write-up motivating and describing the intended work.

Students will *work alone, or in groups of 2-3.* **Groups must be formed now during the proposal stage.** Revisions to group membership will not be allowed after the proposal submission deadline has passed.

The project proposal submitted on Gradescope as a PDF.

Technical Specification

The project proposal should do three things: motivate the research problem the project will address; describe how visualization or web technology will be instrumental in addressing this problem; and propose a project team with agreed upon roles for each member.

Motivation: Students must construct the project around a real research problem they want to pursue. *Students are encouraged to work with their advisors to outline a project that can serve their research interests.* This is meant to help you develop your research portfolio, not to be an onerous distraction. Students who struggle to find a relevant project idea in their research area are encouraged to join a group who is working on something that sounds interesting.

The proposal itself should state the intended research problem clearly. This often requires identifying the intended audience (e.g., research community) for your research, and unpack-

ing some light background information about your topic (e.g., what approaches have been tried before? why is this problem hard?). The motivation should conclude with a brief statement about your intended approach and anticipated outcomes.

How will visualization or web technology help? Students should give an exposition of how they plan to use visualization or web technnology to advance their research. This is a core learning objective for the course, so it's important that you articulate how the project will satisfy it in order to get approval for your project. For example, maybe solving your problem requires a new data collection interface, public facing data presentation, front-end application, or data analysis? The use of visualization and/or web technology in the project should be non-trivial, but these do not need to be the focus of the research. It may help to mock up figures to include in this part of the proposal, just to make your plans concrete.

Project team: *Students must identify who will work on the project and what they will do.* If students are working in groups, each contributor must have clear and agreed-upon responsibilities. Work should be divided roughly equally. Each student in a group project should contribute to the visualizations and/or web technologies developed. Students who opt to work alone should use this space to break down the tasks required to complete the proposed work. It may help at this stage to reflect on difficulties that might arise and suggest contingency plans.