Final Project Guide
CSE 575 Fall 2022

1 Introduction

This document describes the instructions for the final project. Projects will be carried out in groups, each group consisting of 5–6 people. A project should require a substantial amount of work, involving theoretical and/or experimental work. That is, you are expected to state and prove new and interesting theorems, contribute interesting working code, or both.

If you have a project topic in mind and need to form a group, feel free to reach out to the rest of the class in the Course Slack workspace (accessible through Canvas). The channel `#project-groups` has been created specifically for this purpose.

Project Requirements & Grading The project will consist of three components: a proposal, a presentation, and a final report. A LaTeX template for the proposal and report is provided for you on Canvas along with this guide.

This project accounts for 30% of your grade for this course. It will be broken down as the following:

- 1/3 Proposal
- 1/3 Presentation
- 1/3 Final Report

2 Project Proposal

Due: Friday, September 23, 2022

The project proposal describes the scope and the planned direction of your project. The goal of the project proposal is to help you (1) choose a good project—one that is feasible and educational—as well as (2) set actionable milestones.

Your proposal document must be submitted and *accepted* before you begin working on your project. Your initial proposal may be rejected and returned to your for revision. In this case, talk to your TA and revise your proposal before proceeding with the project. If you wish to change the project in a significant way or change your group *after* your proposal has been accepted, talk to your TA.

The proposal should be typeset using the provided LaTeX template.[1] The document should be limited to 3 pages and uploaded to Canvas as a PDF. Only one person from your group needs to make a submission. It should contain the following sections:

- *Abstract*: In one paragraph, describe what you want to do for your project, clearly outlining the goals and anticipated work involved.
- *Group*: Briefly comment on any relevant technical background of your group. Include the preferred contact info for each member.
- *Introduction*: Describe the motivation for your proposal. Why is this an interesting project? Why do you want to do this? This section should also include a paragraph on the project's course relevance. Which topic from the syllabus does your project relate to? If it is not on the syllabus, describe how your project is related to statistical learning.

[1] If you are not familiar with LaTeX, follow the tutorial at `https://www.overleaf.com/learn/latex/Learn_LaTeX_in_30_minutes`.

- *Background*: Provide the relevant technical material and any useful references for your project. What do you already know, and what do you need to learn?

- *Measures of success*: What are your measures of success for your project?

  - Baseline: What is the minimum level of progress to be considered a success?
  - Stretch: What would be considered a clear, unquestionable success?

- *Preliminary plan*: Include a rough timeline for the rest of the semester, explaining key milestones towards completing your project. Provide a rough sketch of the expected roles and responsibilities of each member of your group.

3 Project Presentation

Due: Monday, November 14, 2022

Each project will be allocated 10–15 minutes for an in-class presentation. The exact presentation time will be announced later depending on the number of teams formed.

The presentation will describe your work for the project, along the lines of your proposal. That is, you should aim to include: a description and motivation for your project, the technical work done by your group, and the results and conclusion. If you encountered any unexpected or interesting challenges, please also share with the class what they were and how you addressed them.

Each project should be mostly done and ready for presentation by Monday, November 14, 2022. The actual presentation time for each project will be scheduled at a later date.

Please be respectful to your classmates and attend others' presentations. In addition to your own presentation, you will also be graded on attendance and participation in Q&A.

4 Final Project Report

Due: Wednesday, December 7, 2022

The final report should follow a standard research paper structure and use the provided LaTeX template. The document may have up to 7 content pages and an unlimited number pages for references and an optional appendix. The following is a suggested structure, but you may choose use a different structure.

- *Abstract*: Describe the content of the project in one paragraph.

- *Introduction and Motivation*: Provide a summary of the problem, motivation for the work, and why it is relevant for this course. Also outline your technical contributions (methods and results).

- *Problem Description*: Describe the problem you are addressing in more detail.

- *Methodology*: Explain the methods used in detail. Also describe the necessary background material for understanding the technical contributions, especially any that was not covered in class.

- *Results*: Provide a detailed description of your results and observations. This may be theoretical or experimental.

- *Related Work*: Describe relevant related work.

- *Conclusion*: Include a brief summary of the main contributions of the project. What are some potential future work? Did you succeed in your initial objectives outlined in the proposal? What would you do differently next time?

We will evaluate your final report on the technical quality of the project as well as the quality of writing. A more detailed evaluation plan will be given at a later date.

The document should be submitted on Canvas as a PDF. Please also provide working code with a README containing instructions on how to run your code. Only one member of the group needs to make a submission.

Academic Honesty You are encouraged to use open-source code and libraries as long as you respect the terms of their licenses. Make sure to attribute any open-source material appropriately—*copying someone else's code without proper citation for its original source is considered plagiarism*. We have a *zero-tolerance policy* of plagiarism or any other academic dishonesty.

Good luck and have fun!