COSC 4368 Final Project

Project Overview:

The final project is an opportunity for you to apply what you have learned in class to a problem of your interest, which sometimes can lead to a piece of publishable work. You can work in teams of up to 4 people. Potential projects usually fall into these two tracks:

- Applications: If you are interested in some problems from other domains (e.g., biology, engineering, etc.), it is great to apply the algorithms learned in the class to solve those problems.
- Algorithms: You can also develop a new algorithm or a new variant of existing algorithms, and apply it to solve AI tasks.

The project will include a project proposal, a final report and a group in-class presentation.

Project Proposal (5%):

The project proposal should be no more than one page. It should describe:

- What is the problem that you will be investigating? Why is it interesting?
- What reading will you examine to provide context and background?
- What data will you use? If you are collecting new data, how will you do it?
- What method or algorithm are you proposing? If there are existing implementations, will you use them and how? How do you plan to improve or modify such implementations? You don't have to have an exact answer at this point, but you should have a general sense of how you will approach the problem you are working on.
- How will you evaluate your results? Qualitatively, what kind of results do you expect (e.g., plots or figures)? Quantitatively, what kind of analysis will you use to evaluate and/or compare your results (e.g., what performance metrics)?

Submission:

- Please submit your proposal as a PDF. **Only one person on your team should submit. Include the names for all team members.**
- **Submission deadline:** October 23, 11:59pm

Final Report (17%):

Your final report is required to be between 4-6 pages using the provided template. Please use this template so we can fairly judge all student projects without worrying about altered font sizes, margins, etc.

The following is a suggested structure for your report. You don't necessarily have to organize your report using these sections in this order, but that would likely be a good starting point for most projects.

- **Title, Author(s)**
- **Abstract:** Briefly describe your problem, approach, and key results. Should be no more than 300 words.
- **Introduction:** Describe the problem you are working on, why it is important, what you will talk about/do, and an overview of your results.
- **Background:** any relevant and specific information? What other people have done on this topic? How is your approach similar or different from others?
- **Data:** Describe the data you are working with for your project. What type of data is it? Where did it come from? How much data are you working with? Did you have to do any preprocessing to use this data in your project?
- **Methods:** Discuss your approach for solving the problems that you set up in the introduction. What you did? Why is your approach the right thing to do? You should demonstrate that you have applied ideas and skills built up during this semester to tackling your problem of choice.
- **Experiments:** Discuss the experiments that you performed to demonstrate that your approach solves the problem. You might perform an ablation study to determine the impact of various components of your system, experiment with different hyperparameter or architectural choices. You should include graph, tables, or other figures to illustrate your experimental results.
- **Conclusion:** Summarize your key results – what have you learned? Suggest ideas for future extensions or new applications of your ideas.
- **Supplementary Material:** This is not counted toward your 4-6 page limit and will be submitted as a separate file. Your supplementary material might include source code, or any interactive visualizations, etc.

In summary, make sure that your report is clearly written and nicely formatted.

Submission:

- You will submit your final report as a PDF and your supplementary material as a separate PDF or ZIP file.
- Your report PDF should list all authors who have contributed to your work. All authors should be listed directly underneath the title on your PDF.
- Include a footnote on the first page to specify the involvement of all authors: discussion, writing code, writing report, etc. And also specify the contribution of each author in percentage (e.g., 30%).
- All related work, any code and any method from previous work should be referenced and cited in the report. You can use a footnote or full reference section (will not counted toward the page limit).
- **Submission deadline:** December 11, 11:59pm

In-class Group Presentation (5%):

We will have in-class group presentations in the last week of this semester (11/27-12/01). Each group will be given 8 minutes for presentation and 2 minutes for Q&A. The presentation should clearly introduce what problem you are solving, what approach you use to solve the problem, what results you have, and the main takeaway messages from your project. After the presentation, you will have almost 2 weeks to prepare the final report.