

Spring 2024

Introduction to Artificial Intelligence

Final Project

May 14, 2024

Final Project - Large Language Models

Introduction

In the final project, you will work in groups of **three to four students** to apply methods learned in the class to a real-world problem that you are interested in. In this final project, the topic scope is **Large Language Models**, which has been a popular and highly focused topic since ChatGPT was introduced. Please follow your **Final Project Proposal** to complete your project.

Requirements

You have to submit a **15-minute video, slide, and report** to show your final project. We note that **making a demo for your work is optional**. Below is a full description of what you should include in your final project's video, slide, and report. We will grade your score based on these sections.

- **Introduction** - Brief overview of your problem. Why might this problem be important?
- **Literature Review / Related work** - Description of other work/papers you've found that are related to your task. Just mentioning a paper is not sufficient; you should at least go into brief detail about what kind of approach they are using/how it relates to your work if it's not immediately clear. Please also mention why your work relates to or differs from these related works.
- **Dataset** - Description of data you are using - the size of the dataset, distribution of classes, any preprocessing you needed to do
- **Baseline** - Description and implementation of your baseline. For this video, you don't need to go into too much detail, but please still include some details.
- **Main Approach** - Propose a model and an algorithm for tackling your task. You should describe the model and algorithm in detail and use a concrete example to demonstrate how the model and algorithm work. Don't describe methods in general; describe precisely how they apply to your problem (what are the inputs/outputs, variables, factors, states, etc.)?

- **Evaluation Metric** - Please include what metrics, both qualitative and quantitative, you are using to evaluate the success of your problem. If relevant please include equations to describe your metrics.
- **Results & Analysis** - Please include the performance of your baseline as well as the performance of your main approach so far and any experiments that you have run. If your results are creative and can't find a proper baseline, then you can analyze how you get the results you want. To sum up, include an analysis of your results, and how this might inform your next steps in fine-tuning your main approach. The analysis is very important, and it requires you to think about what your results might mean.
- **Error Analysis** - Describe a few experiments that you ran that show the properties (both pros and cons) of your system. Analyze the data and show either graphs or tables to illustrate your point. What's the take-away message? Were there any surprises? Use these experiments in the error analysis to describe potential errors in the method and why they may have occurred.
- **Future Work** - This section can be short, but please include some ideas about how you could improve your model if you had more time. This can also include any challenges you're running into and how you might fix them.
- **Code** - Please include a link to your Github/Bitbucket/etc. Your repo should include an overview of the task, prerequisite (your coding environment, package version (e.g., requirements.txt in Python)), usage, hyperparameters you set, experiment results, and so on.
- **Contribution of each member** - Please include the contribution of each member with **proportions**. We understand the condition that some members may fail to contribute to this project; thus, we will adjust your score if the contributions are significantly unequal. Feel free to let us know if you have any concerns about this part.
- **References** - Please include a reference section with properly formatted citations (any format of your choice).

Discussion

TAs had opened a channel **Final Project 討論區** on Microsoft Teams of the course, you can ask questions about the final project in the channel. TAs will answer questions in the channel as soon as possible.

Grading

- **Video and Slide: 20%**
- **Report: 80%**

Submission

1. **The deadline for this homework is 6/11 (Tue.) 23:55:00.**
2. Submit a **15-minute video, corresponding slide and report** with the filename of
Project_Team{ID}.mp4
Project_Team{ID}_slide.pdf
Project_Team{ID}_report.pdf
respectively. For example, Please write 05 if you are Team 5 (Project_Team05.mp4).
3. The report should contain all details and your **code link**, you can refer to the video and slide requirements for your report content, some details not on the slide (ex: extra experiment data) can be put in the report too.
4. As this is the final project, we **won't accept any late submissions** for the final project.
5. **We only accept one mp4 and two pdf files**, the wrong format or naming format cause -10 points to your score. If your file is too large to submit on E3, please send an email to TAs.
6. **Only 1 team member needs to submit the video and slide.**
7. We will select several groups for a live presentation on **6/18 (Tue.)**. We note that those selected groups should present your work (not optional this time). Those selected groups will have additional scores. That is, the final class of this course is on 6/18. Please be well-prepared as you might be one of the outstanding teams.