Semester Project

CS-583: Deep Learning

Fall 2023

1 Project

One of the major deliverable of the course is the semester project. This will give you an opportunity to really experience hands-on work in deep learning. You should choose wisely a project that fits your interests. One that would be both motivating and technically challenging. Students are encouraged to come up with their own ideas for the project. A discussion including general domains of the project will also be discussed with you during class.

Very Important! Before selecting the project, you should consider the hardware requirements, time taken by the experiments, and the data size (whether it is too big for you to run). You should not pick a paper which you later found requires much larger GPU memory or much more time to run.

2 Deadlines

This deliverable consists of discussions with the instructor, submission of report, slides, or code to the Canvas, and in-class presentation. The submission deadline is by 11:59pm of the date specified. The deadlines for these are fixed and **no extension or late submission** will be accepted. A missed deadline (even by 1 minute) means you will lose partial marks for the project. Each of the deliverable **does not** have equal weight in the final score. The deliverable marked with * require submission to Canvas. The remaining include discussion or presentation in class.

No.	Deliverable	Deadline	
		Section A	Section B
1	Project Proposal	6th Nov	2nd Nov
3	Project Report - Initial Draft	20th Nov 2023	16th Nov 2023
4	*Presentation Slides	30th Nov 2023	30th Nov 2023
5	Class Presentation & Demo	4th Dec/11th Dec	30th Nov/7th Dec
6	*Project Report - Final + Code	10th Dec 2023	10th Dec 2023

2.1 Project Proposal

This is an initial discussion (approx. 10-minutes) to be carried out with the instructor regarding the details of the project. You should have an idea of what you will be doing. This includes:

- **Team member:** You should know whether you will be working with another student or not.
- **Title & Problem Statement:** You should have an idea of the specific problem that you are trying to solve for the project.
- **Data & Evaluation:** You should have idea of what type of data will be used, is it publicly available, or will you need to scrap it. Additionally, you should know the evaluation criteria you will be using to measure the performance of your system.

2.2 Project Report

You will create a written document (**pdf/docx**). As an example, you can look at Steven's 2022 submission for WMT competition's CodeMix Machine Translation task. You should double check for typos/grammatical errors etc. The final report should include the following sections:

- **Title:** The paper title and team member's names, course name and Stevens email IDs.
- **Abstract:** A short paragraph giving an overview of the paper including the problem, how the authors tried to solve it and the improvement they observed.
- **Github link (in abstract):** The abstract should include the github link where you will put all the code.
- **Introduction:** It should give an overview of the overall project. You should discuss the problem you tried to solve, the method you used, the data used and the results you obtained, and (if any) problems including the setup or the final results being different from what paper reported.
- **Contribution:** You should include the contributions to the project, report as well as the presentation by each team member. Give a list of specific tasks performed by each student.
- **Method:** A paragraph describing the approaches, methodology, and techniques followed.
- **Data:** A paragraph describing the details of the data including the size of the train, validation and test datasets as well as the the link to the data.

- **Tools & Technologies:** The details of the software/library packages (including the links) and hardware requirements (personal GPU or Colab etc).
- **Experiments:** Add the training details of the paper's method (if different from baseline) to the section 'Experiments'. You should also include training details like training time or memory usage etc. You should also include the details of the evaluation method you used.
- **Results:** Details of all the results for the baseline and the optimized methods. The main results should be mentioned in a table and any optimization/parameter tuning results should have a plot.
- **Problems/Issues:** This should include the details and issues when setting up the library/packages for the experiments. If no initial results are mentioned in the section 'Results', you should mention reasons why you were not able to obtain any results.
- **Conclusion:** A paragraph giving the summary of the report.

3 Class Presentation & Demo

As part of the project, you will be formally presenting your project in class. Each group will have 15-20 minutes to present their work, followed by 5 minutes of Q&A. The presentation should include the following:

- Project title & team members
- Brief overview
- Details of the datasets used
- Details of the tools/technologies used
- Details of the experiments
- Results
- Optimization methods (if any)
- Project demo: This can be either a pre-recorded video or a live demo
- Conclusion

Submission

This is a group/individual project with each group having a maximum of two students. Each group should submit two deliverables. (i) A single pdf/docx file for final report. (ii) A single ppt/key/pdf file for the presentation slides. The submission files should be named in the following format: *report_user1_user2.pdf* & *slides_user1_user2.pdf*