ESE-5390 Final Project Specification

Before the end of this semester, you will work in groups to complete a final project in the broad area of machine learning systems. Students can choose to complete a project that is in one of the following forms:

- **Category 1:** Designing and exploring topics of interest in the broad area of machine learning systems relevant to this course.

- **Category 2:** Reproducing results found in published papers relevant to this course.

The grading will reflect how well you define your problem, survey previous work, (re)produce the engineering artifacts, conduct experiments, and present and document your results in a comprehensive technical report.

General Guidelines

Regardless of which category of project you choose, there are several criteria that the projects must follow:

- There will be up to 10 project groups, each having a **minimum of 3 and maximum of 4 people**. We encourage you to use **EdStem** to find teammates and form groups.

- We recommend using the **Kaggle environment**. While you may use your customized environments, technical support will be provided only for **Kaggle**.

Grading Breakdown

Your project will be evaluated based on the following components:

1. Project Proposal (10%)

Each group must submit their project proposal on **Nov. 5th**. Proposals should be one to two pages long plus references. They should include:

- A description of your topic.

- A statement of why you think the topic is interesting or important, a description of the methods you will use to evaluate your ideas.

- References to at least three papers you have obtained and read.

2. Project Report (60%)

Your report must follow the **ACM Conference Proceedings Primary Article Template** and must not exceed **8 pages** (excluding references and optional appendices). Templates are available in both LaTeX and Microsoft Word, but we recommend using LaTeX on Overleaf for collaborative writing. Your report should contain the following sections:

- **Abstract** (≤ 200 words): A concise overview of your project's focus and outcomes.

- **Introduction:** Include background and motivation

- **Methodology:** Describe your engineering effort here

- **Evaluation:** Include necessary figures and comparison

- **Conclusion & Discussion:** Reflect on key insights, challenges, and lessons learned.

- **Optional Appendix** ($\leq$ 4 pages): Use this section to provide extended results or technical details as needed.

3. Final Presentation (30%)

Presentations will be held during the last two lectures. Each group will have **10-12 minutes** to present a summary of their project. **All group members must actively participate** in the presentation.

- **Content:** Your presentation should cover the problem statement, methodology, results, conclusions, and potential future work.

- **Timing:** Time limits will be strictly enforced. Practice your presentation and plan to skip slides if necessary to stay on schedule.

- **Grading:** The same grading rubric used for paper presentations will apply.

Reproducibility Bonus Opportunities

Students may earn up to **20% of the project grade** in bonus credit by delivering a highly reproducible project artifact. Bonus credit is awarded at the teaching team's discretion based on the completeness and usability of your reproducibility package.

To qualify, your submission should enable others to:

- Run your code with minimal setup (e.g., scripts, containers, clear dependencies)

- Reproduce key results reported in your final deliverable

- Understand your methodology through well-structured documentation

Late Day Policy

Since the artifact and report submission is on the first day of the project presentation, no late days will be allowed for the project.

Important Dates

Date	Deliverable
Oct. 31th	Group formation
Nov. 5th	Proposal approval
Dec. 3rd	Project Report
Dec. 3rd - 8th	Project Presentations
Dec. 8rd	Code Submission for Reproducibility Bonus

Concluding Remark

This final project offers an exciting opportunity to explore advanced neural network acceleration techniques while reinforcing your understanding of key concepts. Use this specification as a roadmap, stay organized, and aim for clear, reproducible results in your work. Good luck!