

Energy-Efficient Computer Systems ECE 299.10

The final project provides an opportunity to conduct computer architecture and systems research. The size of the project can vary but should be comparable in scope to a conference paper. Final projects may be performed in teams of up to three students. Projects may also be linked to projects required for other courses. The project includes the following deliverables.

1. Research Proposal and Plan (20%) – Oct 15

This deliverable contains two elements: a proposal and plan.

The proposal should be a single page that describes the project. Clearly state the research question being investigated. Motivate the project, describing why the question is interesting, important, and qualifies as research.

The plan should be more comprehensive and include the following comments. Page counts are suggestions for the relative length of the sections:

- a. Related Work (2): Are there other research projects that have tried to answer similar questions? This section should be a significant start to a literature survey, including a discussion of prior work and your contributions over prior work. It is not necessary to have read all the related papers, but the bibliography (list of papers) should be complete.
- b. Conclusion (<1): What shape or form will the conclusions take? You will not know results in advance, but you should know the format of those results. For example, if you compare two systems, you would expect to say things like “System A outperforms System B in these instances and System B outperforms System A in these other instances.” After the research is complete, you will explain why.
- c. Experimental Setup (1-3): What experiments will you conduct? Why? What question is each experiment designed to answer? What do you hope to learn from each experiment? What measurement tools will you use and how will you know if those tools are accurate? Consider a decision tree (e.g., if we learn X from experiment 1, then we must do A, otherwise we must do B). The more detail provided in this section, the more easily you will be able to execute the project and the more useful feedback you can expect from the instructor.
- d. Resources Needed (<1): What equipment, software, tools will you need?
- e. Schedule (<1): Include dates and milestones.

2. Status Meetings (10%) – Weeks of Nov 1, Nov 15

Please plan on attending office hours at least twice to talk about project status. Instructor will want to hear about progress through the stated research plan, about obstacles encountered, about surprising results, etc. These meetings are intended to provide feedback and are more useful if work has already been completed. Please schedule these 15-20 minute meetings in advance.

3. Extended Abstract (25%) – Dec 6

An extended abstract is a condensed version of the paper. Most of the research should be completed at this point. It should contain a few key results but does not necessarily need all results completed. It should be well-written and should have complete sections for the entire paper, except results and conclusions. Introduction, motivation, related work, and experimental methodology sections should be complete. Results and conclusions should be sketched with a few tentative results. These abstracts will be reviewed by your peers in a simulated program committee meeting.

4. In-class Presentation (15%) – Dec 13

Each project will present a short talk on their research in class. Plan for a 15 minute presentation and a 5 minute Q&A. Motivate the problem and explain important aspects of the work. After the presentation, the audience should want to read your final report.

5. Final Report (30%) – Dec 19

The final report is a research paper of approximately 10 conference pages, including figures. Identify the key findings, but also describe shortcomings, caveats, and assumptions. Discuss potential future directions for follow-on work. Several reports may be suitable for conference submission and the instructor can work with students to turn them into submissions.