ECE/ISE 7202 AU22 – Final Project Guidelines

The final assessment for our course this semester is in the form of a final project. The project is 60% of the final grade, with grade breakdown and (tentative) deadlines given below.

Forming groups. You are encouraged to work in groups of 2. You can choose to work independently, although you will be held to the same standards as a group of 2. If you want to work as a group of 3 that is possible too, but you will be held at higher standards than a group of 2.

Project components and percentage of final grade:

1. **Interim project report (10%)**: Your project proposal will be an **at most** two page document (one-page preferred). In it, you will clearly describe the problem you want to study for your final project, identify at least 3, or more, research papers you are planning to read from the existing literature (from recent years, and from reputable conferences/journals), propose the steps you plan to take to study the identified problem, and your expected outcomes. I will provide feedback on this document to make sure your proposal meets the course requirements. This proposal is due by Friday, October 21st. I'd be happy to meet in office hours or separately to help polish your initial ideas and point to related literature.

2. **Final project report (30%)**: This is the written portion due by Monday, December 12th. The final report will summarize your readings and findings. Your are encouraged to format it like a research paper. Specifically, it will include (i) an introduction and motivation, (ii) details on the problem being studied, and its mathematical formulation or description (e.g. in the MDP framework), (iii) discussion of related literature you have read, and (iv) evaluation of the proposed idea/solution. Component (iv) will be different depending on the problem you have selected (in most cases, I suspect it will require numerical simulations; in some cases, it may be mathematical proofs). This report will (tentatively) be a 6-page document (more formatting guidelines to be given later).

3. **Presentations (20%)**: You will prepare both a 3-minute lightning version, and a 15-minute conference-presentation style talk. Each group will deliver their 3-minute presentation during our last lecture on December 6th.

Some thoughts on project choice:

This can take on a few forms: (1) the formulation of a problem in the student's field of active research or general interest, and either an analytical evaluation of an RL algorithm on the problem, a computational implementation of a solution using one of the reinforcement learning methods (covered in the course or beyond), or a mixture of both, and (2) an in depth literature review on a recent, advanced topic in RL. Attempts to extend an existing research paper or an existing RL algorithm will also be allowed, but the interim report should clearly make the case that there can be substantial extensions over the existing work.

You may have an idea for a project that does not seem to fit the above categories. Please reach out so we can talk more. Lastly, you are most welcome to pick a project that aligns with, and builds off of, your current research or work.