MEAM 517 Final Project

Overview

The final project is designed to be open-ended. Recommended project themes are below. Note that hardware applications are not recommended, except in rare circumstances where the hardware platform is already built and ready for use.

- Taking some of the course algorithms and applying them to a novel or interesting problem of your choice.
- Study and implementation of an existing idea that was either discussed in class or some other state-of-the-art method. Many papers related to the course are listed on Canvas, and reading through these is a good way to get ideas.
- Novel research in an area related to the course material. Students pursuing individual research projects are encouraged to relate the course project to their outside research, but the course project should be something *new* for the course. It is my hope that some of the final projects will ultimately be developed into publishable research papers.

Projects will be assessed on the quality of presentation and writeup, the overall degree of difficulty/level of ambition, and on the success of the project. A well-researched, ambitious project that is ultimately not successful, but is well explained and presented, may receive a better grade than a project that is a simple implementation of an existing algorithm.

Students will work either individually or in groups of **TWO** (no larger, no exceptions). It is recommended that most students work in a group of two, unless an individual is pursuing a research project.

Use of third-party tools (`drake.mit.edu`, ROS, etc.) is allowed–but keep in mind that use of third-party implementations of the course material means the intellectual depth of your project needs to be something *other* than just implementing algorithms.

Components and timeline

1. Project proposal: a brief (1-2 paragraph) project proposal will be due on **October 30**. The proposal should describe the problem, the desired outcome, and including any anticipated challenges. The proposal can include images, but should not be longer than 1 page.
2. Project proposal presentation: also on **October 30**, you will present your proposal to the class for feedback (3 minutes and 3 slides **MAXIMUM**).
3. One paragraph status report on **November 13**.
4. Presentations on **December 2** to **December 9**.
5. Final report due on **December 10**.
6. You will provide peer feedback on both the proposal and the presentation.

   For the written proposal, each student will be randomly assigned three other projects, and asked to provide brief, anonymous feedback on the proposal.

   For the presentations, each student will provide anonymous feedback on all other presentations

Group submissions: groups of two should use the "Project Groups" feature on Canvas, and submit a single set of documents per groups.

Presentation

The last 2-3 classes of the semester will be used for project presentations. Expect roughly 5 minutes per presentation, plus questions, with slightly longer given to pair projects. Exact timings and scheduling will depend on total number of groups.

Report

The final report will summarize the results of your work, and should be presented in a similar style to that of a conference paper. At a minimum, it should include

- an abstract,
- an introduction, explaining the problem and the motivation,
- your results, including relevant figures and plots,
- an honest discussion of what worked, what didn't, and any future work you might want to do,
- and a list of any citations.

We recommend using the IEEE conference format, https://www.ieee.org/conferences_events/conferences/publishing/templates.html, which gives options for both LaTex and Word. Reports, including references, **should be no longer than eight pages**. Any text beyond this limit will not be read, and a letter grade may be deducted for every page beyond the eighth!

The report can also include multimedia extensions (like videos), where appropriate.

Grading

Proposal	20%
Presentation	30%
Report	40%
Participation and peer feedback	10%