<u>ECE 324 Project Structure, Timeline and Grading</u>
Fall 2019 - Revised

The project in this course is an opportunity to develop a machine learning application in an area of your own choosing. It also provides the chance to do a full engineering project that is much closer to real-world engineering and research than most course assignments that you've done so far. While this project has some structure, you will be required to deal with the ambiguity and significant decision making that make up the life of a real engineering practitioner.

That makes it harder than most things you've done so far, but it comes with these significant benefits:
1. The only way to really become an engineer is to do what real engineers do, which includes understanding the difficulties of open-ended goals and projects. Even if it doesn't go well, and you spend time reflecting on why that was so, you will be taking an important step towards becoming a professional engineer.
2. You will have an opportunity to practice the ever-crucial oral and written communication skills that every engineer needs to operate successfully.
3. When I have interviewed people for full-time jobs, internships, and for graduate school, the most important question I ask is to have them tell me about a major project they did. This is such a project.
4. If you were to have a video of yourself presenting your project, and you think that video has sufficient quality, you can put a link to it on your personal LinkedIn page. LinkedIn has taken the place of a personal CV or resumé, and such a video would be a compelling statement of what you are capable of. Rather than the usual simple listings of skills and previous jobs, it brings who you are to life.

Project Rules

1. Projects must be done in groups of 2. You may select your own partner.   No groups of 3 will be allowed, but if there is an odd number of students, just one group of three will be permitted, or a single-person group.
2. The project must make use of machine learning, as taught in this course, and the training, validation and testing of some kind of ML system should form an important part of the project. While you have significant latitude in your choice, it should be an *application* of machine learning, and not research on machine learning approaches.
3. The project topic is of your own choosing. It must be unique within the class. No two projects can be on the same topic, as determined by a 'uniqueness approval' step in the project.
4. There should be some data collection that is a meaningful part of the training process. You will not be able to use a known data set that has already been used by many others.
5. University of Toronto rules on plagiarism apply. We are aware that there are many machine learning projects already posted on the internet, and these will be checked for plagiarism.

6. All teams must use a specific GitHub Repository provided to them to store their source code throughout the term. Note that the University *does not* claim any ownership of the software produced.

Timeline and Deliverables

The project has several steps and deliverables, listed in the table below. The following sections provide more detail; in addition, there will be specific rubrics for each deliverable.

Date	Item	Description
10-Oct-19	Project Discussion in Class	Overview of Project
15-Oct-19	Team Forming Deadline	Select Project Partner; agree on working approach; email instructor with names
22-Oct-19	Uniqueness Approval Deadline	Team Must have received 'uniqueness approval' email from instructor
25-Oct-19	Project Proposal Doc Due	Written Proposal Document
27-Oct-19	Project Proposal Slides Due	Slides for Proposal Presentation
Oct 28 - Oct 31	In-Class Proposal Presentations	4 Minute in-class presentation of Proposal by Team
12-Nov	Progress Report	Requirements in rubric
Nov 26 - Dec 2	In-Class (and Tutorial) Final Presentations	Presentation of Final Project
02-Dec-19	Final Report Due	Authored by both Team Members
02-Dec-19	Individual Report Due	One Report per Team Member
Dec 3 - Dec 6	Individual Interviews	One-on-One interview with Instructor

Uniqueness Approval

Once you and your partner have formed a team (the deadline for which is above), you should brainstorm ideas for what your project topic should be. Once you have that idea, send an email to the instructor – Jonathan.Rose@ece.utoronto.ca with a one to two sentence description of the topic. The instructor will either respond with 'you have uniqueness approval' (meaning no-one else has proposed a similar topic) or 'please try again, that topic is taken.' You must have received uniqueness approval by the deadline above.

Project Proposal

This is a document with a maximum of 1200 words. See the Rubric posted for details.

In Class Proposal Presentations

The team will make a four-minute presentation, using projected slides, in class, based on your proposal, but with some differences. See description. posted in Quercus

There is be a maximum of 8 slides, including the title slide. The **minimum** font size is 20.

Progress Report

The report should be a maximum of 1000 words and include the following:
- Reprise the description of the goal and motivation (what & why)
- Describe what data you have collected so far
- Describe your model(s) and at least one result from training of the data
- Show how the 'machine' you're going to train will be used
- Describe what work remains to be done together with your plan to achieve it

You should also commit all the code created to-date to your assigned github code repository.

In-Class Final Presentation

The team will make a six-minute final presentation. See the Rubric posted on Quercus.

Final Team Report

This is a document with a maximum of 2000 words. See the Rubric posted on Quercus.

Individual Report

This is a maximum 500-word document. See the Rubric posted on Quercus.

Individual Interview

The individual interview with the instructor is a 20-minute discussion/question answering session.   Come prepared to explain all aspects of your project and to answer questions about it. The interviews will take place in the same period as the final project presentations.