ECE 6254: Final project guidelines

A major component of this course consists of an in-depth project on a topic of your choosing. These projects will be done in small groups of 2–4 students. The project will have several graded components, including a detailed (written) project proposal, an online presentation, and a written report. The project proposal is scheduled to be due on **March 27** (this deadline is the same for both on-campus and distance students). The presentations will be in the format of short videos, which will be due the last day of class. The written report and the videos will be due at the end of finals period.

The topic for the project is up to you – you may choose to center your project around a particular problem/dataset that you have encountered in your research or elsewhere online, you could do a more theoretical investigation of some aspect related to machine learning, or you might instead choose to do a more in-depth investigation of some area of machine learning not covered in this course. Please feel free to consult early and often with Prof. Davenport and the TAs regarding the choice of the project topic.

Note that the project is worth 20% of your overall grade, and is to be graded out of a total of 40 possible points. 10 of those points will be for the project proposal, 15 for the project presentation, and 15 for the written report.

Project proposal

The first main deliverable for the final project is the *project proposal* to be **submitted via Gradescope** on March 27. **Please submit only a single proposal – any student in the group can upload the proposal, and as long as it lists the names of all group members then all members will receive credit.** The proposal must contain the following information.

- **Project summary**: Using a **maximum of one page**, the first page of your proposal should summarize the project by clearly indicating what you plan to do. You should include sufficient background so that anyone taking this class should be capable of understanding (at a high-level) what you are planning on doing. The goal here is to convince me why the problem you want to address is important and why the outcome of your project will be interesting. Note that you are free to change your focus later in the semester, I just want to get a notion of your current plans. **Please list all team members on this page.**
- **List of tasks/collaboration plan**: In this section I would like you to provide a short list of the tasks you believe will be required to successfully complete the project. Tasks can include learning about pre-requisite background subjects, reading specific papers, implementing particular algorithms, acquiring/processing a data set, or anything else that you believe will be necessary for the project. You may also include tasks related to preapring/printing the final project presentation and writeup. For each task, include the following information:

- **Task:** A statement of the task to be accomplished. Your statement should ideally be specific enough that you will be able to clearly measure when it has been finished. "Read papers X and Y" is better than "Learn about field Z".
- **Leader(s):** Which team member(s) will be primarily responsible for accomplishing this task. (It is fine if all team members are planning to contribute to all aspects of the project, but please designate one or at most two people to be the leaders for each task).
- **Deadline:** A tentative deadline for when you would like to have this task accomplished.
- **Importance:** A brief statement (only a sentence/phrase) as to the overall importance of this task. Some tasks are critical, meaning that it is hard to see how the project will be complete without it, whereas other tasks are more "optional" items that you would like to get to if you have the time. For each task, state if it is a critical or optional task. If later tasks depend on it as a prerequisite, state this.
- **Potential challenges:** A short list of things that you think might "go wrong" and what, if anything, you plan to do to avoid/overcome these challenges and/or what you would do if you can't get past them.

Please try to be concise and **limit your list of tasks to one page**.

Your document should be **single-spaced** with a font size of **12pt** or higher and margins no smaller than **1 inch**, and is limited to **two pages**: one for the summary and one for the list of tasks. The proposal will be graded out of 10 possible points, which will be assigned as follows.

- **Project summary [4 points]**
  - Does the summary clearly explain what your proposed project will consist of?
  - Does it adequately motivate why the topic is interesting?
  - Does it explain all necessary background information and define all necessary notation in a way that would be clear to an average member of this class?
- **Project plan [4 points]**
  - Does the project plan/task list clearly explain the proposed plan of attack?
  - Are tasks clearly defined in a measurable way?
  - Are the tasks realistic?
  - Have the authors considered all relevant contingencies/challenges?
- **Overall clarity/quality of proposal [2 points]**
  - Do the ideas in the proposal flow together in a clear/logical manner?
  - Is the document free of typos and spelling/grammatical errors?
  - Are all figures (if any) clearly described and legible?

Project presentation

The next main deliverable for the final project is the *project presentation* to be submitted on **11:59pm, April 23 (Atlanta time)**. The presentation should be in the form of a pre-recorded video and modelled after a standard scientific/technical conference talk. Your presentation can be a **maximum of 5 minutes** (but it can be shorter!) and all group members should contribute. It should be submitted via Gradescope as a link that is publicly accessible (e.g., to YouTube or an alternative location).

The poser will be graded out of 15 possible points, which will be assigned as follows.

- **Presentation quality [7 points]**: The presentation should
  - contain a clear title and list of project team members,
  - be visually appealing and professional,
  - make use of visuals to enhance the information,
  - be clear and logically organized,
  - be free from typos/errors,
  - have an audio track that is easy to understand with clear and distinct speech,
  - clearly summarize the results of the project in a way that *anyone* in the class could understand.
- **Technical contents [8 points]**: Your presentation should address
  - the motivation for why you selected the particular problem you chose,
  - a sufficient amount of background information so that *anyone* in the class will be able to understand what you did,
  - a high-level description of your technical approach, highlighting why your approach is appropriate and any particularly creative/original aspects to your work,
  - what you have accomplished (so far), with details such as how you selected any unknown parameters and how you dealt with validation/evaluation of your algorithm, if applicable.

Final project report

The final report for the project should be submitted by **11:59pm, May 2 (Atlanta time)**. The report should be uploaded via Gradescope. The report must be **single-spaced** with a font-size of **12pt** or higher, margins no smaller than **1 inch**, and can be a **maximum of 4 pages**, excluding references. **I will read/grade only the first 4 pages of whatever you send me, so do not exceed this limit.** If you have accomplished a lot, it may sound difficult to fit everything into this page limit, but 4 pages is already a lot more than you will often get, and concisely summarizing the result of a complex project is a tremendously important skill. **You do not need to include code in your report, if relevant you can instead simply provide a link (e.g., to GitHub.)** Also, if you can say everything in fewer pages, that is all the better. **There is no page minimum.**

The final report must contain the following elements.

- **Project summary**: Using a **maximum of one page**, the first page of your final report should summarize the project by clearly indicating what you accomplished. You should include sufficient background so that anyone taking this class should be capable of understanding (at a high-level) what the problem is, why it is interesting, and what you ultimately did. (Note: You do not have to devote the entire first page to this summary. Your detailed description can start on the first page after the summary if you would like.)
- **Detailed description:** The rest of the report should provide a detailed description of the project including an introduction/motivation, background for the problem, technical details of the approach taken, results, and discussion/conclusions. **The detailed description should also include, either as a separate section or integrated into the writeup, an indication of which team member(s) were primarily responsible for which portions of the project.**

The final report will be graded out of 15 possible points, which will be assigned as follows.

- **Professionalism [3 points]**
  - Is the report attractive, legible, and free of typos/grammatical errors?
  - Does it make appropriate use of figures?
  - Did you follow the above instructions?
- **Overall writing quality [3 points]**
  - Is the report clear and easy to read?
  - Are all concepts adequately defined?
  - Do all ideas flow together in a clear/logical manner?
- **Technical merit [9 points]**
  - What is the overall quality of the work performed for the project?
  - Is the problem particularly novel/interesting?
  - Is the approach taken appropriate and well-justified in the report?
  - Are there aspects of the project that are particularly creating/original?