

CSc 59929 – Introduction to Machine Learning

Spring 2020

Erik K. Grimmelmann, Ph.D.

Final Project Description

During the final third of the semester, you'll work on an individual project.

The project will include

- An in-class presentation with charts (in PowerPoint, Google Slides, etc.) The presentation will be six to seven minutes long plus and additional one to two minutes for discussion and comments.
- Your charts from your in-class presentation.
- A written report (in PDF format). The report will be 10 to 15 pages in length (double spaced). If you have lots of tables and/or charts, you can include them in an appendix.
- See below for more detail.

The projects can be on almost any topic in Machine Learning.

- It can be a topic that we covered (or will be covering) in class
- It can be a topic that we didn't cover (or won't be covering) in class.
- You can cover a method in machine learning.
- You can apply a method (or methods) from machine learning to a dataset that you find interesting.

The project must be mathematical and/or quantitative in nature. For example, if your subject is the history of a machine learning method to solve a particular problem, you'll need to go through the equations and perhaps even develop and run some code. In short, it need to be a computer science project and not (just) a history of computer science project.

If you borrow ideas or code from anyone or any online (or offline) source, make sure to credit that source.

If you choose a topic that we covered in class you will need to go beyond what we went over in class.

Here are some things you may want to include in your project. Some will be relevant to some topics, but not to others:

- How does how long your method take as you change the size of the input; that is, what is it's O ? Compare the theoretical O with what you observe.
- How accurate is your method? How does the accuracy vary as you change network design or key hyperparameters?
- How do the timings and/or accuracy vary across different methods to solve the same problem?

The project will consist of the following three components:

1) Classroom project presentation (via Zoom).

- a. You will present your project to your classmates and me. The presentations will begin on May 5.
- b. Since your written project submission is not due until May 21, you will probably not have finished your project; so present as much as you can.
- c. You must use PowerPoint or another similar program.
- d. You will be limited to **seven minutes** including set-up time.

2) Classroom project presentation charts.

- a. You will submit your PowerPoint (or another similar program), charts via Blackboard by end-of-day on May 19.

3) Written submission.

- a. Submit a writeup of your project via Blackboard by end-of-day on May 21.
- b. It should be in PDF format and from 8 to 15 pages, double-spaced.
- c. You may (but don't have to) submit an appendix of no more than 15 pages. The appendix may include additional charts, graphs, etc.
- d. You may (but don't have to) submit code. I do not plan to run the code.