CS/ECE/ME 532 Fall 2020:
Project Description for Section 2 and Section 4

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1 Course Project Details

The goal of the course project is to deepen the understanding of the concepts and algorithms learned in the class by applying them on real world datasets and analyzing the outcomes. This will be *individual projects*. Each student will choose a dataset/application for a classification task with the approval of the instructors, applies three different classification algorithms learned in the class on it and analyses the results. The course project will contribute 15% of the total towards your final score for the course.

Here is an outline of what is expected for the course project:

- The dataset can be either a bench mark dataset for a *classification task* like MNIST, Fashionmnist, CIFAR-10, or similar publicly available dataset (many such datasets are available on websites like Kaggle, UCI repository etc.) or a publicly available dataset in the area of your research for a classification task. Please consult with the instructor during the proposal phase to determine the appropriateness of the dataset you plan to use.
- The project will involve applying at least three different types of classification algorithms covered in this course on the dataset and analysing the results. For example, linear regression, support vectors, and neural networks with 2-5 layers.
- You need to submit a proposal (1 or 2 pages) with details of the dataset, algorithms that will be applied and an outline of proposed timeline for project progress.
- You are expected to set up and maintain a Github or Gitlab page for your project with clear documentation throughout the project.
- At the end, a final report (4-5 pages) has to be submitted (as a pdf). Your report should have an introduction, a clear description of the dataset and the algorithms being used, results including tables and figures and discussion, assessment of the strengths and limitations of the various methods used, and a conclusion. We recommend using Neurips latex template for latex. You can also choose to use your favorite typesetting software, as long as you follow the format suggested and the file is in a pdf format.
- Review two reports by peers and submit a half to one-page review for each. We will provide you some guidelines on how to write a review.

2 Schedule

The following is a schedule for the course project:

- Initial proposal due on **Oct 22nd**. The initial proposal should be 1 or 2 pages in length with: a clear description of the dataset that will be used, a short description of the algorithms that will be applied to the dataset, and a timeline for the progress of the project. Include a link to the project page (see below).
- Create a Github or Gitlab page for the project and include it in the initial proposal. Start with updating the project proposal here when you submit it. Maintain this project page regularly as you proceed with the project.

- Post updates on the project: First update is due by **Nov 17th** and second update is due by **Dec 1st**. The update on Nov 17th should include a short description of the progress made since the initial proposal and plans for next step. The update on Dec 1st should include progress since the previous update and plans for the final completion. The update should be a pdf and it can have links to the project page for relevant results you are referring to.
- Final project report due on **Dec 12th**. Final report should be 4 or 5 pages long. It should have an introduction, clear description of the dataset and the algorithms being used, results including tables, figures and discussions, assessment of the strengths and limitations of the various methods used, and a conclusion.
- Review of two projects from the peers (which will be assigned to you) due on **Dec 17th**. Write a half to one page review for each of the two projects.

3 Evaluation Criteria

The course project will be evaluated for a total of 30 points. 15 out of 30 points will be for the results and report. The other 15 points is for proposal, project page, execution of the project, updates and reviews.