MSAI-349, Fall 2024
Final Project: Proposal
Due Date: Thursday, October 24th @ 11:59PM
Total Points: 5.0

Description: For the Final Project, your group will implement a machine learning project of your choice. The project can be formulated to explore almost any machine learning task. You are responsible for selecting the topic, dataset(s) and machine learning techniques(s). You must try at least two methods, one of which should be a neural network. You should implement your code for both of these techniques. All projects need to be approved. I am available to meet individually with each group to review the project scope and to offer guidance. *These meetings are optional* and will be scheduled following receipt of the proposals.

In general, simple projects that are well executed are preferred to projects with expansive scopes that may be difficult to complete in a class project. Replicating existing research and applied projects is acceptable, with the understanding that your group project should have some novel component.

Assignment: The project proposals must be fully contained in a single PDF file (no hyperlinks, paper references, etc.) that does not exceed one page in length and cover the following four points:

- (0.5 points) What task will you address, and why is it interesting? This should be as simple as a couple of sentences.
- (1.0 points) How will you acquire your data? This element is intended to serve as a check that your project is doable -- so if you plan to collect a new data set (which I discourage), be as specific as possible.
- (1.0 points) Which features/attributes will you use for your task?
- (2.5 points) What will your initial approach be? What data pre-processing will you do, which machine learning techniques (decision trees, KNN, K-Means, Gaussian mixture models, etc.) will you use, and how will you evaluate your success (Note: you **must** use a quantitative metric)? Generally, you will likely use mean-squared error for regression tasks and precision-recall for classification tasks. Think about how you will organize your model outputs to calculate these metrics.

What to Turn In: Submit your PDF file to Canvas. I will post a sign-up sheet for optional group meetings via Zoom starting the week of October 28th.

Note: You will likely invest a significant amount of time on this project, so think of something that will be fun, be of interest to the group collectively, and serve as a topic of discussion during internship/job interviews.

Good luck, and have fun!