**MSAI-349, Fall 2023**
**Final Project: Proposal**
**Due Date: Thursday, October 19th @ 11:59PM**
**Total Points: 10.0**

**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 are required to try at least two different technique(s), one of which should be a neural network. You will be required to implement your own code for at least one of these techniques. All projects need to be approved. I am available meet individually with each group to review project scope and to offer guidance. These meetings 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/or applied projects is acceptable, with the understanding that your group project should have some novel component.

**Assignment:** The project proposals should be a single PDF file less than two pages in length and cover the following four points:

- (1.0 points) What task will you address, and why is it interesting? This can be as simple as a couple of sentences.
- (2.0 points) How will you acquire your data? This element is intended to serve as a check that your project is doable -- so if you're inventing a new data set, be as specific as possible here.
- (2.0 points) Which features/attributes will you use for your task?
- (5.0 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 individual meeting starting the week of October 23rd.

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!***