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CS 4347
Assignment 1
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Overview of ML

1. Machine Learning can be used in many ways. But my definition of machine learning is when you train the computer by providing a set of database and the program would output a prediction based on similarities/differences in the datasets

2. Data, pattern recognition and accuracy are very important in machine learning. It is very important to train the program correctly in order to get the most accurate results. Without ample data, pattern recognition and accuracy the program would not be able to compute an accurate prediction. This can be very dangerous because machine learning is used worldwide in medical industries. It can be very critical when Machine learning is being used in medical industries as any slight error can cause major damages. Therefore it is very important to provide all the correct and ample data before starting the prediction process.

3. Machine Learning uses AI to generate predictions. This is done through the user first providing a database for the AI to train and then the AI produces a prediction after training.

4. The two examples of modern machine applications are:
   a. Facial/Image Recognition: This cannot be built with traditional programming as it requires coding of every little object in the image. This would be considered impossible in my opinion.
   b. Natural Language Processing: This cannot be built with traditional programming as there are many languages in the world. Within the different languages, there are different dialects and accents, which means it would be almost impossible to code all the different variations.

5. In machine learning observation would be considered as the findings of the key similarities or differences that can be used for prediction. It is very important because without any observation, there would be no prediction. A feature can be considered as an aspect of observation where it can be used to identify certain patterns based on the features. Quantitative data refers to data that can be measured. It is used in the datasets where the data may include a number of certain subjects. Qualitative data are the opposite where the datasets would be represented by words. All of these traits are needed in the datasets that would be used to train the program in order to output accurate results.

6. My interest in machine learning started last semester when I interned in a company and my task for that project was to create a machine learning algorithm to predict student outcomes based on similarities/matches in their demographic information. This was the first time I worked on a machine learning project without any previous knowledge. Therefore it was quite difficult for me at the beginning but I was able to complete that project. With the help of machine learning instructors, I was able to make a LightGBM model that used linear regression to compute a prediction. Since then, I have been very interested in machine learning and I wanted to learn more about it.

7. Link to my Github: https://mdyahassan.github.io/CS-475-ML/