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Overview of ML

a. Define ML in your own words

- Machine Learning allows the user to feed a computer large amount of data and the computer will analyze this data and make recommendations and decisions based off the input-data. ML is based on the idea that s computer can learn and adapt based off experience.

b. In a paragraph, summarize the importance of data, pattern recognition, and accuracy in machine learning

- Data is important because there are many things that can be observed and learned from data. Accessing large or small amounts of organized data can help us learn a lot about a specific subject. Pattern recognition in data is important because it helps us better organize data to what we specifically need to see. For example, the statistics of Women in Computer Science in Texas. Accuracy is important because we want to make sure that our predictions are accurate and not just random guesses. ML evaluates the accuracy, efficiency, and performance of algorithms.

c. Describe the relationship between AI and ML

- Machine learning is a subset of Artificial Intelligence. ML allows a machine to automatically learn and adapt from data without explicitly programming, instead making predictions. AI solves tasks that require human intelligence.

d. List at least 2 examples of modern machine learning applications, and explain why these application could not be built with traditional programming

- One example would be Medical Diagnosis. There is no way to efficiently organize large amounts of medical information such as symptoms, potential causes, medications using programming. This data set requires a smarter algorithm using ML to comb through all of it to make a medical diagnosis.

- Another example would be image recognition. ML is used to go through a database of people and affectively match a name to an image. A traditional program would not be able to successfully complete this because there is no way to identify, collect, store, and evaluate facial characteristics without using machine learning.

e. In a paragraph, define the terms observation, feature, quantitative data, and qualitative data and discuss their importance in machine learning

- In a table of data each row is a sample data point called an observation.
- In a table of data each column is called a feature.
- Quantitative data - numeric data
- Qualitative data- can only take on one of a finite set of values.

- The importance of quantitative and qualitative data in ML is to organize large sets of data and be able to access it easier. Quantitative data is organized numeric values, while qualitative data can be used to provide understanding through words and pictures.

f. Write a paragraph describing your personal interest in ML and whether/how you would like to learn more about ML for personal projects and/or professional application

- I am excited to learn and use Machine Learning to be able to automate everyday human problems and tasks in an effective and efficient way. It is an exciting field to get into because it is a technology and skill of the future. The idea that the machine is learning from previous data and applications is cool. I would like to learn more about machine learning to be able to use it to create a personal project that will predict outcomes using large amounts of data.