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CS 4375.004

Overview of Machine Learning

Q1) Define ML in your own words

Machine Learning is a method that analyzes the collected data and finds patterns if there are any to automate existing functionalities or create new ones. It is a branch of Artificial Intelligence and the main goal is to remove human intervention in processing data by using algorithms and statistics.

Q2) In a paragraph, summarize the importance of data, pattern recognition, and accuracy in machine learning

It takes a long time for a person to be knowledgeable in their fields of work. We have more information today than any other generation before and storing this load of information and finding a pattern in each subject is crucial to do any work faster and more efficiently. For example, with the data that's been collected from hospitals and health organizations, we may be able to see a pattern in some of the diseases and maybe we can even cure different kinds of cancers by finding the right treatment for each individual.

Q3) Describe the relationship between AI and ML

Artificial Intelligence is more of a broader concept than Machine Learning. It also includes other techniques and branches to create more intelligent technologies. One of its goals is to reach a level to get things done whereas today some of the tasks require human intelligence.

Machine Learning is a method to analyze the given data by training the machines to improve the performance of any given task.

Q4) List at least 2 examples of modern machine learning applications, and explain why these applications could not be built with traditional programming

Traditional programming is designed to do specific tasks where the goal and the way of reaching the goal are designed by humans. On the other hand, modern machine learning applications require learning and training from the data and improve themselves each and every day. A few examples can be given for these applications:

Machine Learning can be used in Finance to predict market conditions and stick prices by analyzing all different kinds of data.

Machine Learning can be used in Healthcare to analyze diseases and find possible drugs to overcome illnesses.

Q5) In a paragraph, define the terms observation, feature, quantitative data, and qualitative data and discuss their importance in machine learning

Observation is defined as a single data, record, or image in a dataset.

A feature is a specific aspect or a variable of observation to make decisions or predictions.

Quantitative data is numerical data that people can measure such as weight, height, age, density…

Qualitative data cannot be measured so it is not numerical data. These can be colors, someone's opinions, and emotions.

We use these terms in Machine Learning to generate better algorithms for understanding and making predictions in our tasks with the data that is being provided. We can give Finance industry as one of the examples of Machine Learning topics. The algorithms try to predict future stock prices by looking at quantitative data such as stock prices, in and outs, market demands, and popularity; as well as qualitative data such as people's emotions and asking questions of do people fear the given market conditions.

Q6) 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 interested in Machine Learning mainly because of the possible implementations of healthcare applications to figure out illnesses and diseases as early as possible and find the best possible treatment which humans take months and years to develop.