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Overview of ML

a) Machine Learning is the process of developing computer algorithms to enable the computer to adapt and learn to a stimulus.

b) Data is extremely important for machine learning, without it it's almost impossible for the machine learning algorithms to function properly; there would be nothing for the computer to learn from. Pattern recognition is important because this is what allows the computer to continually adapt to each input of data. Accuracy is important because it ensures that the algorithm is working properly and it's reaching its target.

c) Machine Learning is the process in which AI is built upon. AI derives its "intelligence" from the processes and algorithms that are embedded in Machine Learning.

d) Siri, the virtual assistant developed from Apple, is a very popular use of Machine Learning. It can't be built through traditional programming because the program needs to decipher what an end user is saying. It does so by using data that's inputted from the user and then analyzes and learns about what the audio file is trying to say. Another use of Machine Learning is AI in videogames, more specifically Sophy from the racing simulator Gran Turismo. The AI is designed to repetitively go around every track in the game with every car, taking different racing lines, braking points, throttle applications, steering inputs, etc. to then find the most optimal way to go around each track in each car. Traditional programming can't do this because, there is no way for the computer learn and discover the most optimal lap time without running into the need of developing a machine learning algorithm.

e) An observation is a datapoint or instance that comes from an object or dataset. Observations are important because it's the foundation that Machine Learning is built on, it makes its decisions based its overall understanding of each observation. A feature is essentially the combination of an attribute and an observation, say for instance the attribute is "weight (lbs.)" and the observation is "2354" the feature would be "weight: 2354 lbs." Features are important because it helps keep track and categorize data. Quantitative Data is a datapoint which has a numerical value, Qualitative Data is a datapoint which has a categorical value that can't be defined by a number. They're both important because they provide the base for what the Machine Learning algorithms reference and learn from.

f) I would love to use machine learning in the app that I'm helping design, at the company that I'm working for. We're developing a social media app named "Trademark" and could use machine learning to help curate what content we should display to each user to keep them engaged on our platform.