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# Overview of Machine Learning

## Definition of ML in my own words

A field of Computer Science and subfield of Artificial Intelligence in which computers are trained to analyze data and algorithms to imitate the way we as humans learn.

## The importance of data, pattern recognition, and accuracy in machine learning

Data
Data is what we use to train computers with, as well as to gather knowledge and information. We cannot come to conclusions in any given scenario without the associated data. It can take forms such as tables or a set of actions.

Pattern recognition
This is a main goal in Machine Learning. To be as good or even better at recognizing patterns that humans. Here is where the importance of data comes into play again. Without a set of data, a computer will never be able to recognize patterns. Once it does, it can come to conclusions the same way that humans do.

Accuracy in machine learning
Predictions made by a computer in conclusion of pattern recignition based on data is only useful, if it is accurate. Knowledge won't be gained from a prediction if it is just a gamble. Accuracy gives assurance that such prediction is respectable.

## Relationship between AI and ML

Machine learning is a subfield of artificial intelligence, but not an interchangeable term. Artificial intelligence is a computer's capability to mimic human cognitive functions, while machine learning is the concept of computers using mathematical models to analyze data and algorithms like humans without specific instructions. Machine learning is how a computer is trained to think and act like a human.

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## Definition of observation, feature, quantitative data, and qualitative data and their importance in machine learning

Observation
An observation is a sample data point, represented as a row in a table

Feature
A feature is an attribute, represented as a column in a table

Quantitative data
Numeric features/attributes in a set of data

Qualitative Data
A qualitative feature/attribute is an attribute that can only take on one of a finite set of values, such as names or a student's classification

Their importance in machine learning
The importance of data in machine learning is explained in the second paragraph. The importance of different types of data now is important to train a computer to think like a human, as we proceed different types of information in a different way and therefore make different conclusions. It also determines the type of learning we find ourselves in.

## My personal interest in machine learning

I've always heard good things about Machine Learning and have been exposed to it a lot in the past semester. My old roommate was a project director in the AI Society, which motivated me to attend some of their meetings. I also went to some workshops, such as Machine Learning in Video Games, which increased my interest. Most importantly, I really enjoy math and have enjoyed Probability and Statistics last semester a lot. I am planning on graduating next semester and continuing with my master's degree, in which I hope to do research in the field of AI or Machine Learning.