Stanford CS 229 - Machine Learning

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June 2021

1 The Motivation Applications of Machine Learning

"Machine learning is the field of study that gives computers the ability to learn without being explicitly programmed" – (Arthur Samuel, 1959).

Nowadays, Machine Learning algorithms are very spread in multiple areas like biology, postal system, movie streaming apps and many more.

Tom Mitchell gives a more modern and formal definition,he says that a well-posed learning problem is defined as follows: He says that a computer program is set to learn from an experience E with respect to some task T and some performance measure P if its performance on T as measured by P improves with experience E.

Some definitions and major topics of ML are:

Supervised Learning: we're providing the algorithm a data set and we want the algorithm to learn the association between the inputs and the outputs and to sort of give us more of the right answers.

The term **regression sort** refers to the fact that the variable you're trying to predict is a continuous value.

The term **classification problem** refers to the fact that the variable you're trying to predict is discreet rather than continuous.

Vector machines : takes data and maps data to an infinite dimensional space and then does classification using an infinite number of features.

Unsupervised learning: you're given a data set, and its not given any right answer in your data.

Reinforcement learning: the algorithm makes a sequence of decisions over time.