Machine, Data and Learning (CS7.301)

Monsoon 2021, IIIT Hyderabad
06 Jan, Thursday (Lecture 2)

Taught by Prof. Vikram Pudi

Machine Learning

Machine learning involves a scientific study of algorithms and statistical models that computer systems can use. Its aim is to allow computer systems to perform tasks without explicit instructions, but instead by learning from examples.

When there is a large number of patterns for an activity, or the activity is dynamic in some way, this method can be more effective than rule-based systems.

There are three main categories of ML: unsupervised, supervised and reinforcement learning.

Unsupervised Learning

This approach takes data that contains only inputs and finds structures in the data, as in grouping or clustering tasks.

This method finds use in marketing (finding groups of similar customers), biology (classification of species), earthquake studies (identifying dangerous zones among earthquake epicentres) and the WWW.

Supervised Learning

This approach builds a mathematical model using a dataset with both inputs and outputs. This is of use in predictive tasks (classification or regression).

Reinforcement Learning

This approach is concerned with out systems should take actions to maximise rewards. Its applications lie in search engines, information retrieval, and many other tasks.