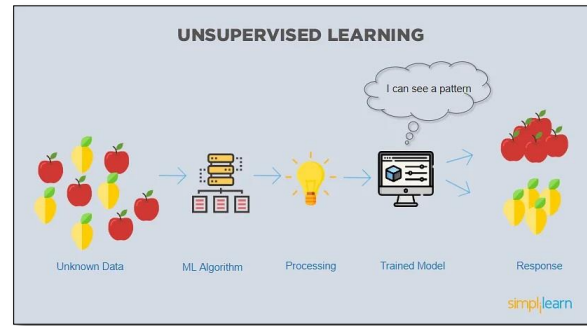
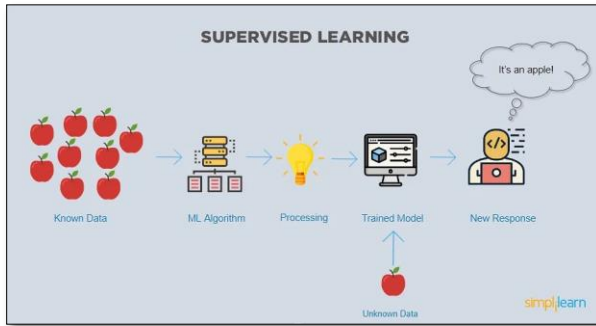


MACHINE LEARNING

What is Machine Learning?

Machine learning (ML) is a branch of artificial intelligence and computer science which focuses on the use of algorithms and data from mathematical models to help computers imitate the way that humans learn. ML uses algorithms to identify patterns within data, and those patterns are usually modeled into a graph that can be used to make predictions. Machine learning can be divided into different types: Supervised, Unsupervised and Reinforcement Learning. Each of these utilize different techniques.



Supervised learning builds a model that makes predictions based on known evidence. This algorithm takes a known set of input data and known responses (outputs) and trains a model to generate reasonable predictions for the response to new data. **Unsupervised** learning finds hidden patterns or distinctive structures in data. It is used to draw inferences from datasets with input data that is not labeled. **Reinforcement** learning is an area of ML that is concerned with how intelligent agents should take actions in an environment in order to maximize the notion of a cumulative reward. The algorithm uses sequential decision making and trial-and-error to gain experience and to “learn” from the given environment. In absence of a training database, it is bound to learn from its experience. Reinforcement learning focuses on finding a balance between exploration (of uncharted territory) and exploitation (of current knowledge).

Machine Learning in everyday life

Machine Learning can provide suggestions based on your interests. For example, Netflix provides a customized list of suggestions based on the user's viewing history and preferences. This includes any other service that offers you suggestions based on what you like, e.g. music streaming services (Apple Music, Spotify, Tidal, etc.) or online shopping websites like Amazon. Other examples include:

- Virtual personal assistants (Siri, Alexa, Bixby, Cortana, etc.)
- Facial recognition,
- Navigation and Traffic Predictions
- Search engine results

FAU Courses

CAP 4612 - Applied Machine Learning and Data Mining

CAP 4613 - Introduction to Deep Learning

CAP 4770 - Introduction to Data Mining and Machine Learning

CAP 4773 - Introduction to Data Science and Analytics

CES 5164 - Structural Health Monitoring

