#EngineeringPlus Online Course Series

ADAMAS
SCHOOL OF ENGINEERING AND TECHNOLOGY

AI & ML

Module: 03
Lecture:

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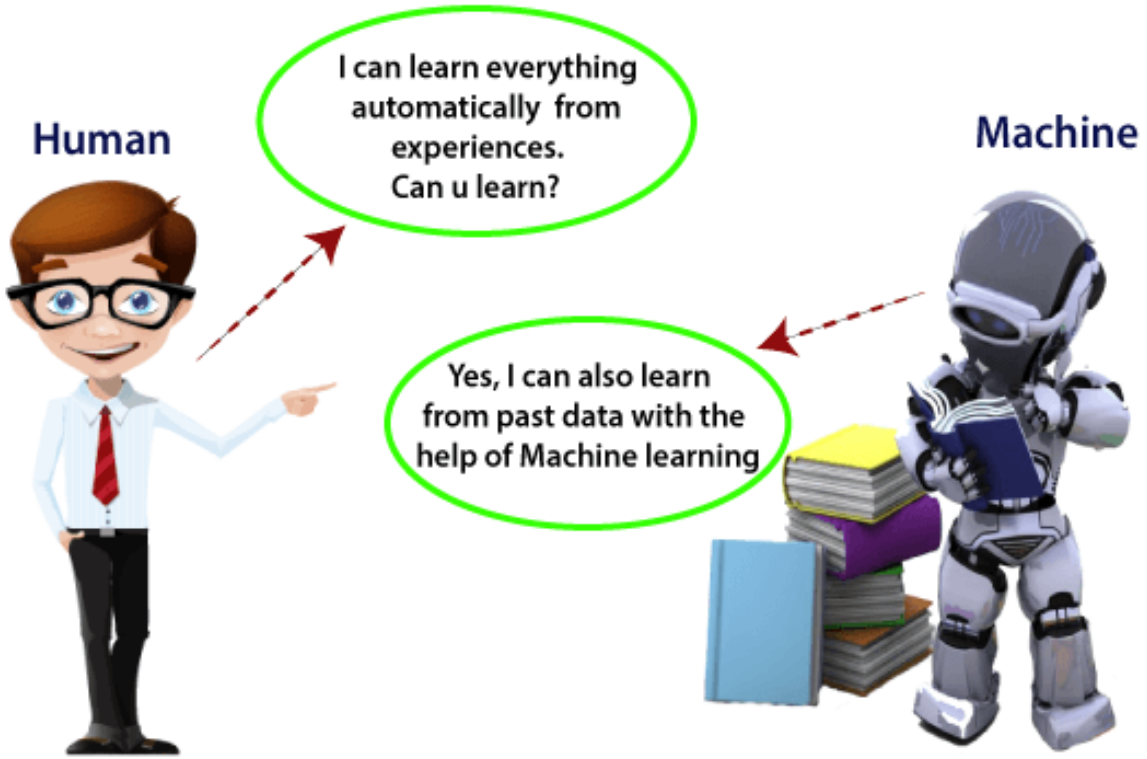
What is Machine Learning?

Introduction

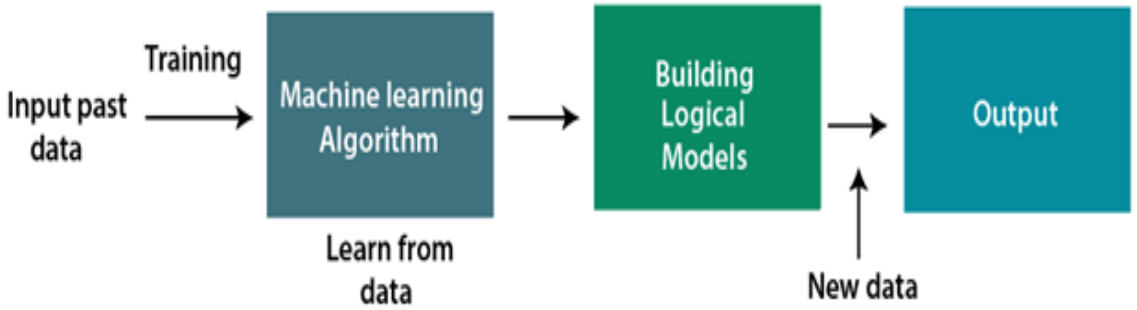


Introduction

According to Arthur Samuel:

"Machine learning enables a machine to automatically learn from data, improve performance from experiences, and predict things without being explicitly programmed."

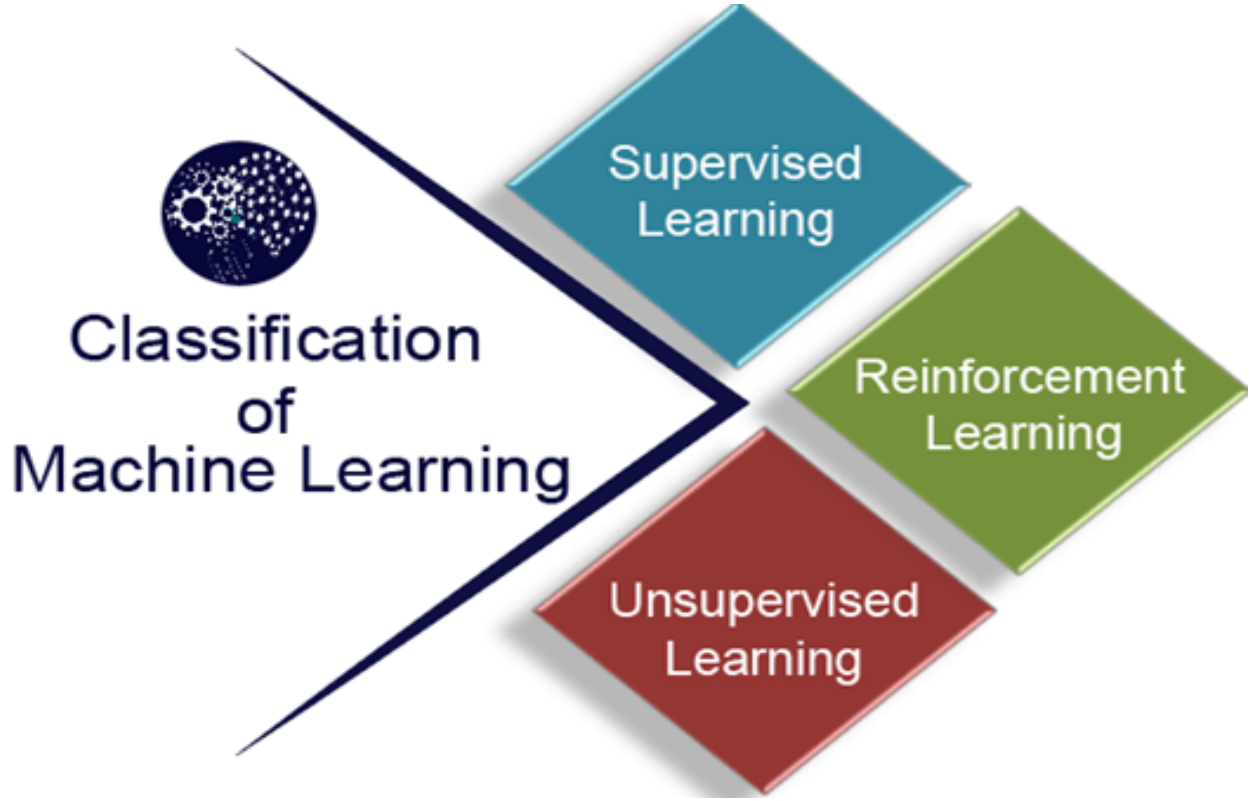
Working of Machine Learning model



Importance of Machine Learning

- Rapid increment in the production of data
- Solving complex problems, which are difficult for a human
- Decision making in various sector including finance
- Finding hidden patterns and extracting useful information from data.

Classification of Machine Learning



Supervised Learning

- Here we provide sample labeled data to the machine learning system in order to train it, and on that basis, it predicts the output.
- The goal of supervised learning is to map input data with the output data.
- Example: spam filtering

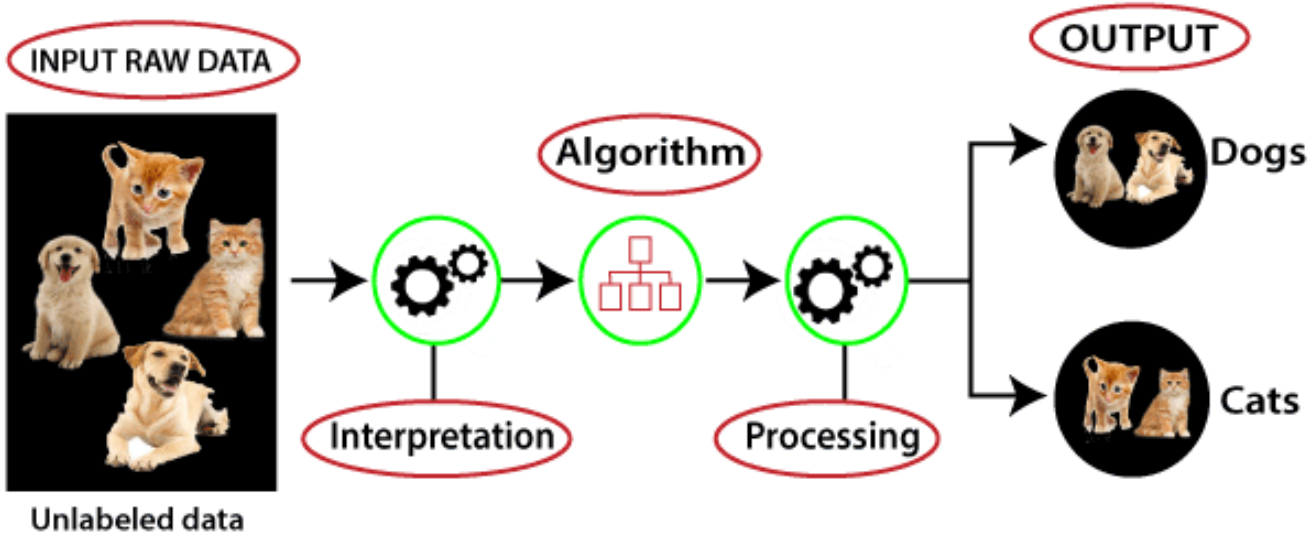
Types of supervised learning

- **Classification**
- **Regression**

Unsupervised Learning

- Here, the learning method is such in which a machine learns without any supervision.
- The goal of unsupervised learning is to restructure the input data into new features or a group of objects with similar patterns.
- Types:
  - ❖**Clustering**
  - ❖**Association**

Unsupervised learning example



Reinforcement Learning

- It is a feedback-based learning method, in which a learning agent gets a reward for each right action and gets a penalty for each wrong action.
- The goal of an agent is to get the most reward points, and hence, it improves its performance.
- The robotic dog, which automatically learns the movement of his arms, is an example of Reinforcement learning.

Machine Learning present status

- Now machine learning has got a great advancement in its research, and it is present everywhere around us, such as **self-driving cars**, **Amazon Alexa**, **recommender system**, and many more.
- It includes **Supervised**, **unsupervised**, and **reinforcement learning with clustering**, **classification**, **decision tree**, **SVM algorithms**, etc.
- Modern machine learning models can be used for making various predictions, including **weather prediction**, **disease prediction**, **stock market analysis**, etc.

References

- Practical Machine Learning with Python, Dipanjan Sarkar, Raghav Bali and Tushar Sharma, Apress