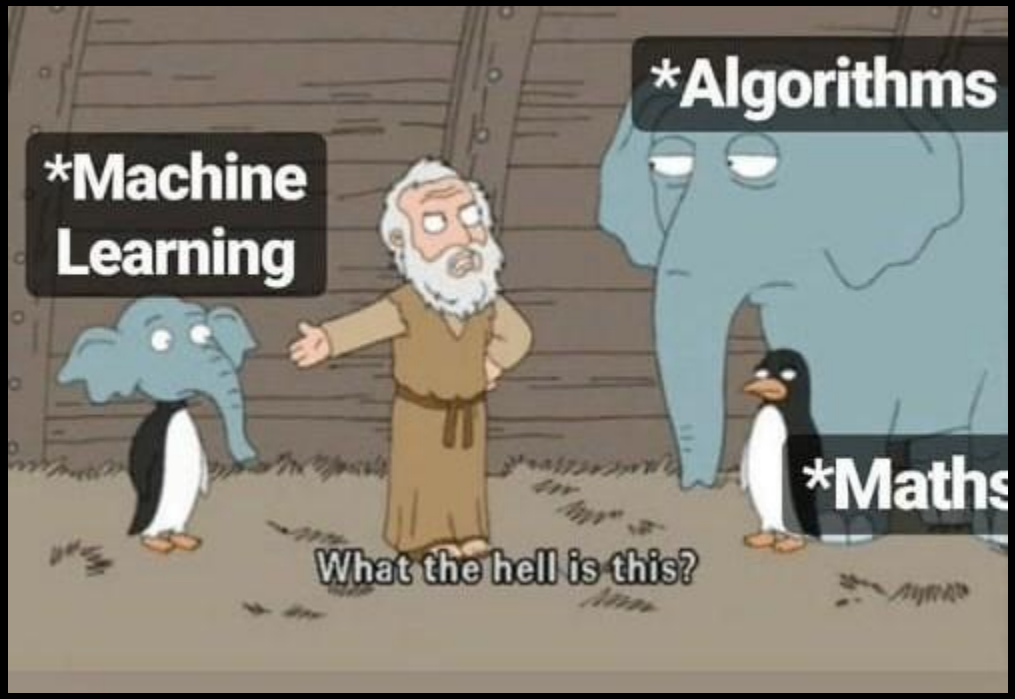
Introduction to Machine Learning

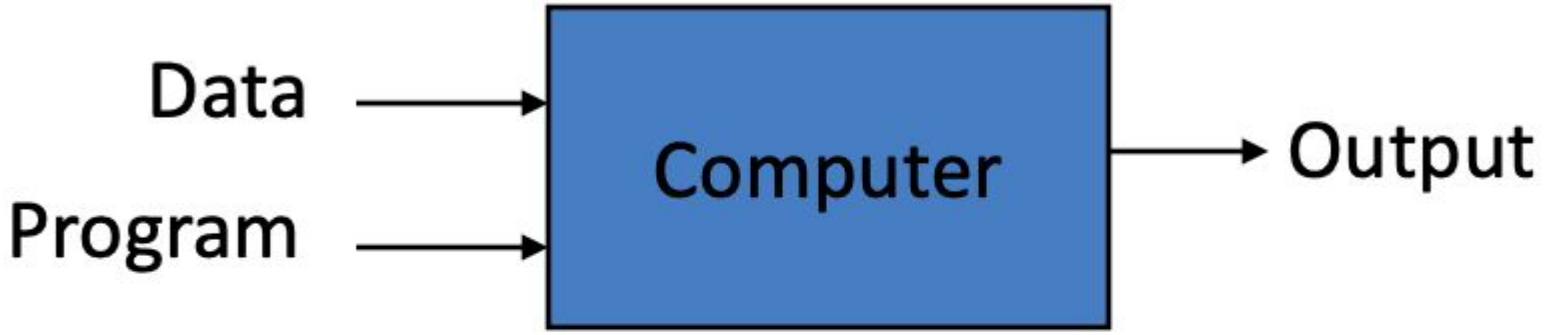


Speaker
Meet Bhanushali

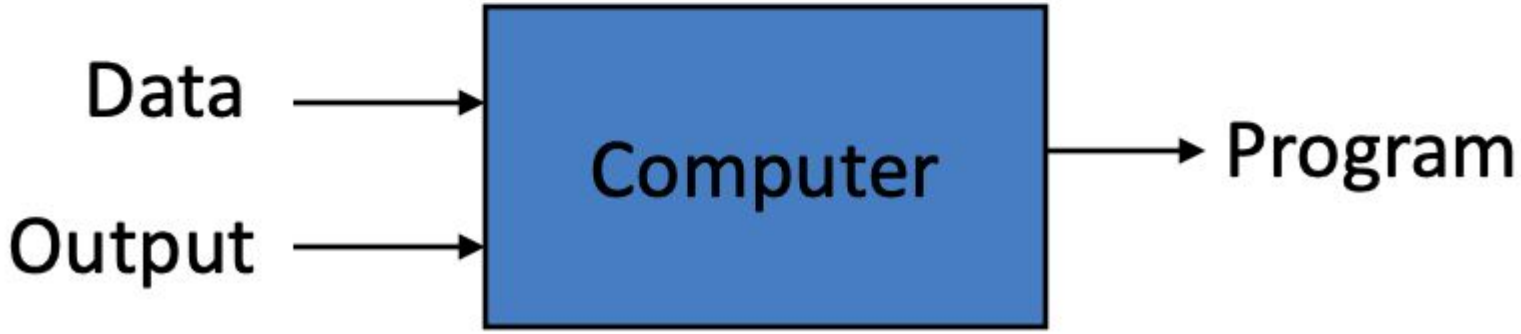
What is Machine Learning

- Machine learning is an application of artificial intelligence that involves algorithms and data that automatically analyse and make decision by itself without human intervention.
- It describes how computer perform tasks on their own by previous experiences.
- Therefore we can say in machine language artificial intelligence is generated on the basis of experience.

Traditional Programming



Machine Learning



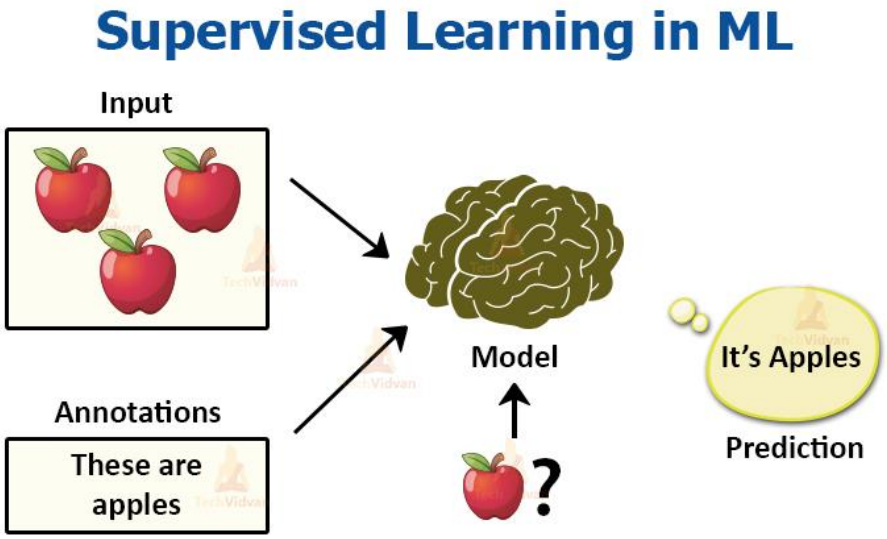
Types of Machine Learning

There are three types of machine learning

- Supervised learning
- Unsupervised learning
- Reinforcement learning

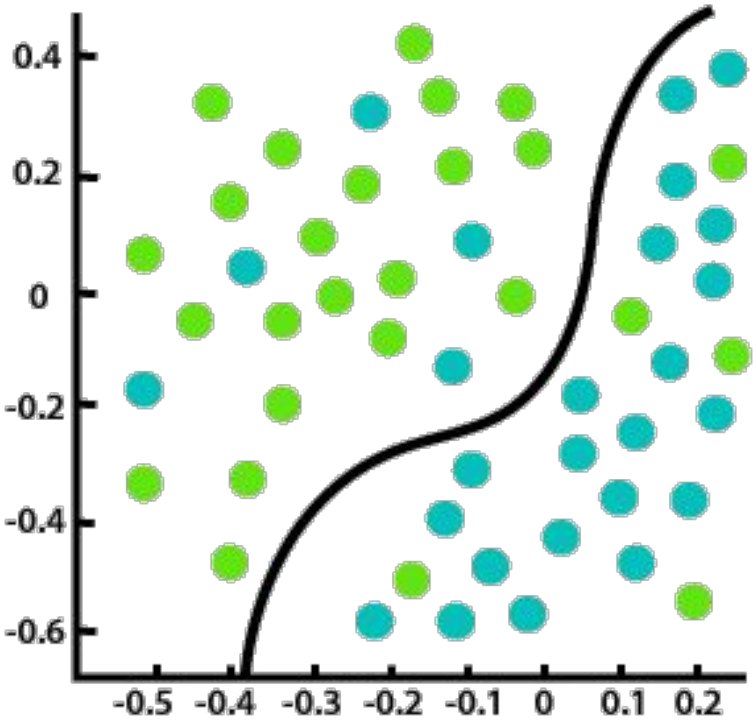
Supervised Learning

- Supervised learning is the types of machine learning in which machines are trained using well "labelled" training data, and on basis of that data, machines predict the output. The labelled data means some input data is already tagged with the correct output.
- In the real-world, supervised learning can be used for **Risk Assessment, Image classification, Fraud Detection, spam filtering**, etc.

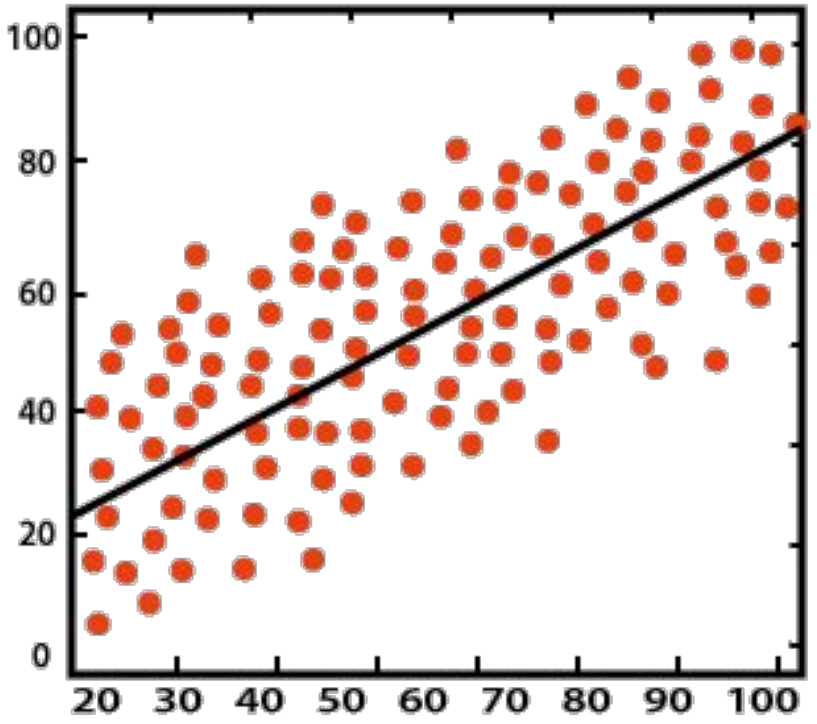


Supervised Learning

Supervised Learning is further divided into 2 types of problems



Classification



Regression

Supervised Learning

1. Regression
   - Regression algorithms are used if there is a relationship between the input variable and the output variable.
   - For example, Regression algorithms are used in weather forecast, Market Trends, etc.
   - Below are some popular regression algorithms

     - Linear Regression
     - Regression Trees
     - Non-Linear Regression
     - Bayesian Linear Regression
     - Polynomial Regression

Supervised Learning

2. Classification

- Classification algorithms are used when the output variable is categorical, which means there are two classes such as Yes-No, Male-Female, True-false, etc.

- Some Classification algorithms are :-

    - Random Forest
    - Decision Trees
    - Logistic Regression
    - Support vector Machines

Unsupervised Learning

Unsupervised Learning

Unsupervised Machine Learning Algorithms are further divided into 2 problems

1. Clustering
2. Association

Unsupervised Learning

1. Clustering

sample

Cluster/group

- Clustering mainly deals with finding a structure or pattern in a collection of uncategorized data.
- Unsupervised Learning Clustering algorithms will process your data and find natural clusters(groups) if they exist in the data.

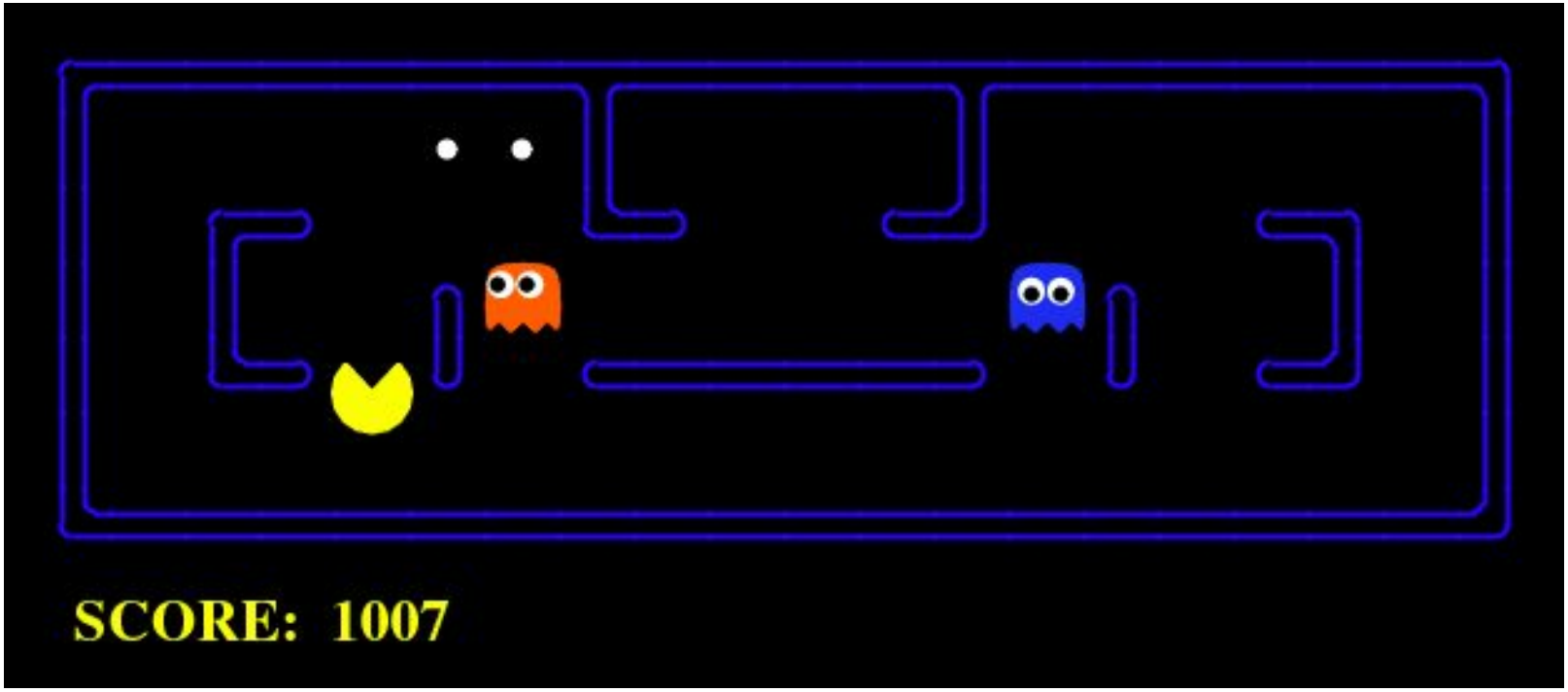
Unsupervised Learning

1. Association

- This unsupervised technique is about discovering interesting relationships between variables in large databases

Reinforcement Learning

Reinforcement Learning(RL) is a type of machine learning technique that enables an agent to learn in an interactive environment by trial and error using feedback from its own actions and experiences.



Machine Learning

Supervised

Task Driven
(Predict next value)

Unsupervised

Data Driven
(Identify Clusters)

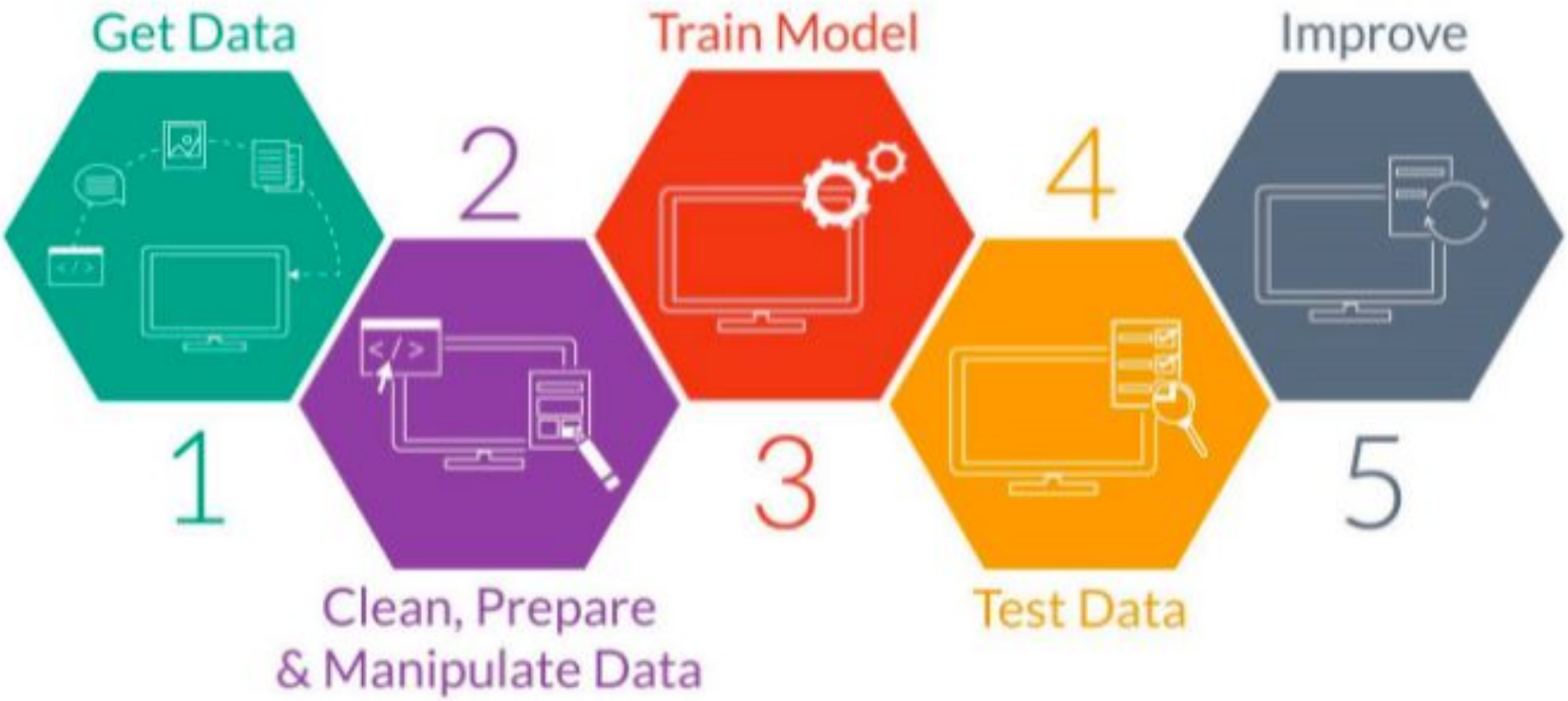
Reinforcement

Learn from
Mistakes

Machine Learning Uses:

- Traffic prediction
- Virtual Personal Assistant
- Speech recognition
- Email spam and malware filtering
- Bioinformatics
- Natural language processing

Flow to Solve any Machine Learning Problem



Thank you