

SNS COLLEGE OF ENGINEERING

Kurumbapalayam(Po), Coimbatore – 641 107 Accredited by NAAC-UGC with 'A' Grade Approved by AICTE, Recognized by UGC & Affiliated to Anna University, Chennai

Department of Information Technology

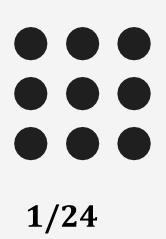
19IT601 – Data Science and Analytics

III Year / VI Semester

Unit 3 – PREDICTIVE MODELING AND MACHINE LEARNING

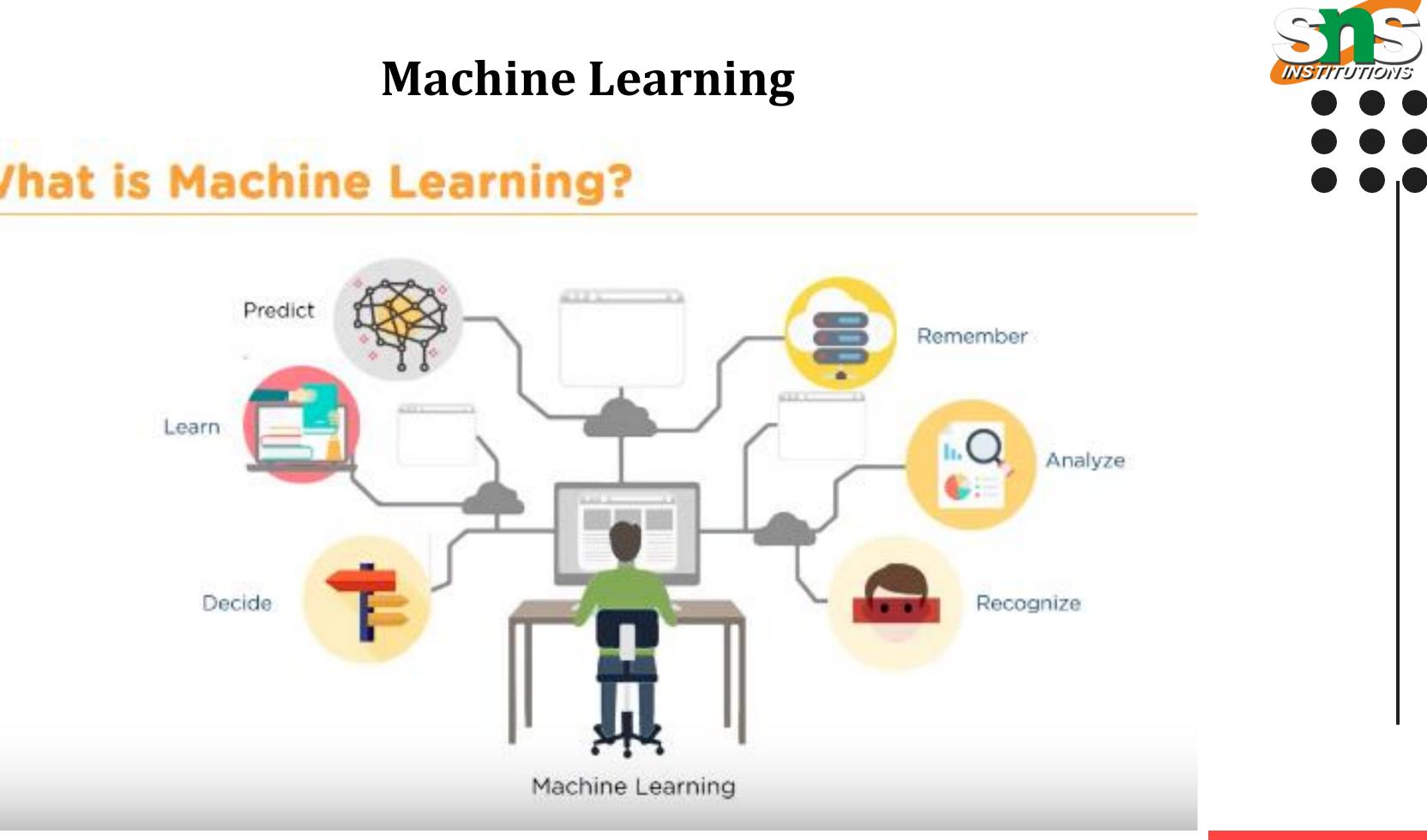
Topic 4: Machine Learning Algorithms







What is Machine Learning?



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Machine Learning

What is machine learning?

A system gets ability to automatically learn and improve based on experience.



Ordinary system



Ability to learn and improve on its own



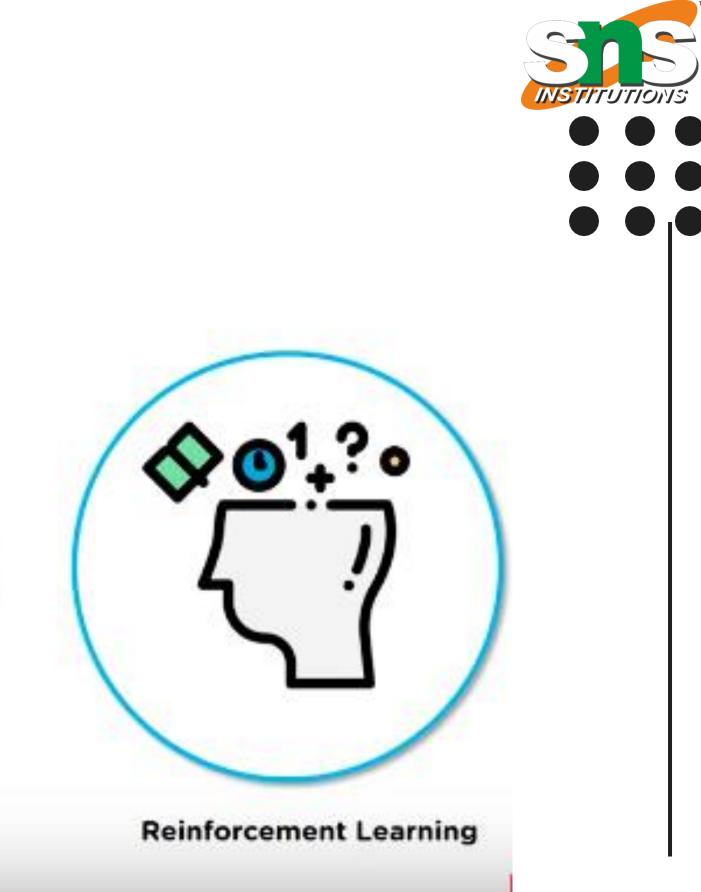




Machine Learning

Types Machine Learning

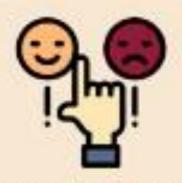








Supervised Learning



Classification

Problems with categorical solutions like 'Yes' or 'No', 'True' or 'False','I' or 'O'



Regression

Problems wherein continuous value needs to be predicted like 'Product Prices', 'Profit'

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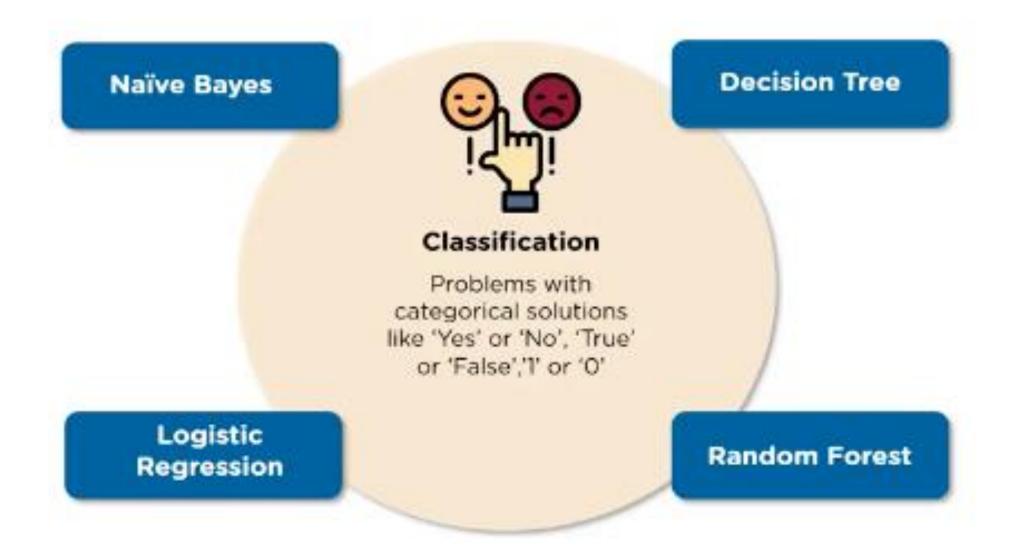
Clustering

Problems wherein the data needs to be organized to find specific patterns like in the case of 'Product Recommendation'





Supervised Learning - Classification





- KNN (K Nearest Neighbor)
- SVM (Support Vector Machine)



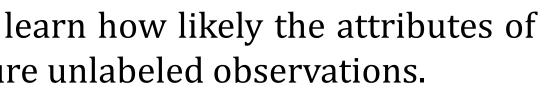


Decision Tree

- Most classification methods are supervised,
- They start with a training set of pre-labeled observations to learn how likely the attributes of these observations may contribute to the classification of future unlabeled observations.
- Classification is widely used for prediction purposes.

Example

- Classification can help health care professionals diagnose heart disease patients.
- Based on an e-mail's content, e-mail providers also use classification to decide whether the incoming e-mail messages are spam.







Decision Tree

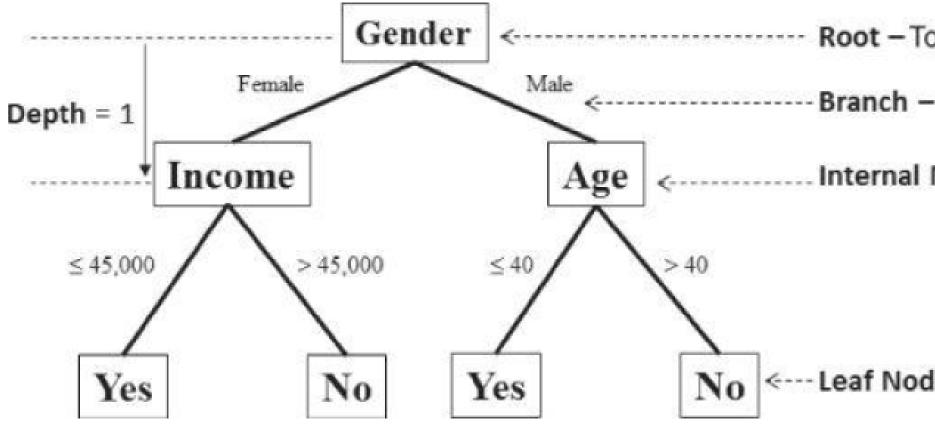
- The input values of a decision tree can be categorical or continuous.
- A decision tree employs a structure of test points (called nodes) and branches, which represent the decision being made.
- A node without further branches is called a leaf node. The leaf nodes return class labels.
- Decision trees have two varieties: classification trees and regression trees.
- Classification trees usually apply to output variables that are categorical—often binary—in nature, such as yes or no, purchase or not purchase, and so on.
- Regression trees, on the other hand, can apply to output variables that are numeric or continuous, such as the predicted price of a consumer good or the likelihood a subscription will be purchased.







Decision Tree



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- Root Top internal node
- Branch Outcome of test
- Internal Node Decision on variable

<--- Leaf Node - Class label





THANK YOU

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