

PRIOR KNOWLEDGE

TEAM ID :PNT2033TMID25540

PROJECT NAME : Natural Disaster Intensity Analysis and Classification

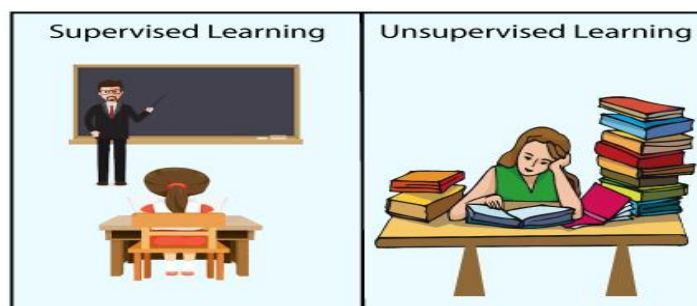
DATE : 18 November 2022

SUPERVISED AND UNSUPERVISED LEARNING

- ✓ **Supervised and Unsupervised learning** are the two techniques of machine learning. But both the techniques are used in different scenarios and with different datasets.
- ✓ **Supervised learning** is a machine learning method in which models are trained using labeled data. In supervised learning, models need to find the mapping function to map the input variable (X) with the output variable (Y).

$$Y = f(X)$$

- ✓ **Supervised learning** needs supervision to train the model, which is similar to as a student learns things in the presence of a teacher. Supervised learning can be used for two types of problems: **Classification** and **Regression**.
- ✓ **Unsupervised learning** is another machine learning method in which patterns inferred from the unlabeled input data. The goal of unsupervised learning is to find the structure and patterns from the input data. Unsupervised learning does not need any supervision.
- ✓ **Unsupervised learning** can be used for two types of problems: **Clustering** and **Association**.

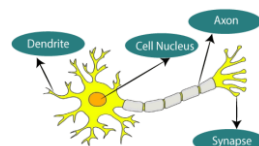


REGRESSION&CLASSIFICATION & CLUSTERING

- ✓ **Regression and Classification** comes under **Supervised** learning and **Clustering** comes under **unsupervised** learning.
- ✓ **Regression** - If the prediction value tends to be a continuous value then it falls under Regression problem. The Regression analysis is the statistical model which is used to predict the numeric data.
- ✓ **Classification** - If the prediction value tends to be categorical like yes/no , positive/negative , etc then it falls under classification problem. In classification the data is categorized under different labels according to some parameters and then the labels are predicted for the data.
- ✓ **Clustering** - Clustering is the task of partitioning the dataset into groups, called clusters. The goal is to split up the data in such a way that points within single cluster are very similar and points in different clusters are different. It determines grouping among unlabelled data.

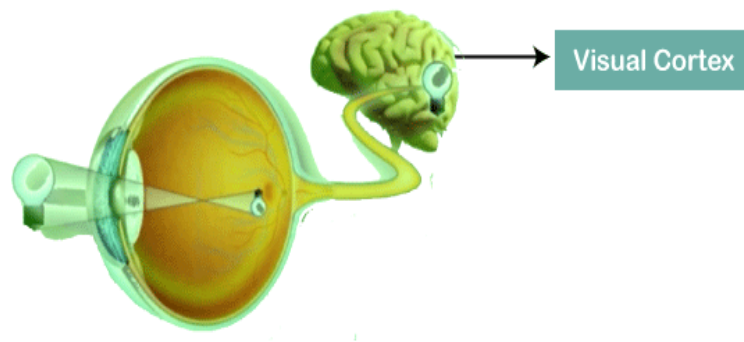
ARTIFICIAL NEURAL NETWORKS

- ✓ The term "Artificial neural network" refers to a biologically inspired sub-field of artificial intelligence modeled after the brain.
- ✓ An Artificial neural network is usually a computational network based on biological neural networks that construct the structure of the human brain.
- ✓ An **Artificial Neural Network** in the field of **Artificial intelligence** where it attempts to mimic the network of neurons makes up a human brain so that computers will have an option to understand things and make decisions in a human-like manner.



CONVOLUTION NEURAL NETWORK

- ✓ Convolutional Neural Networks are a special type of feed-forward artificial neural network in which the connectivity pattern between its neuron is inspired by the visual cortex.



- ✓ The visual cortex encompasses a small region of cells that are region sensitive to visual fields. In case some certain orientation edges are present then only some individual neuronal cells get fired inside the brain such as some neurons responds as and when they get exposed to the vertical edges, however some responds when they are shown to horizontal or diagonal edges, which is nothing but the motivation behind Convolutional Neural Networks.
- ✓ The Convolutional Neural Networks, which are also called as covnets, are nothing but neural networks, sharing their parameters.