PANTECH SOLUTIONS®
Technology Beyond the Dreams

AI Master Class series – Day 22

Introduction to Machine Learning

Batch I & 2

Don’t Forget to attend Today’s Event on Tech Hackathon – Chatbot & Integrating with Telegram

Batch 3 Started

Day-22 Agenda.

01.

Machine Learning

Machine Learning & Types

02.

ML Types

Machine learning Algorithms based on Types

03.

Q & A

SEND VIDEO TESTIMONIAL

Participants who sends Video Testimonial, Gonna have Live Video call Interaction session with Me.

Send ur Video Testimonial to the TELEGRAM No: 9003113840
Also in Description

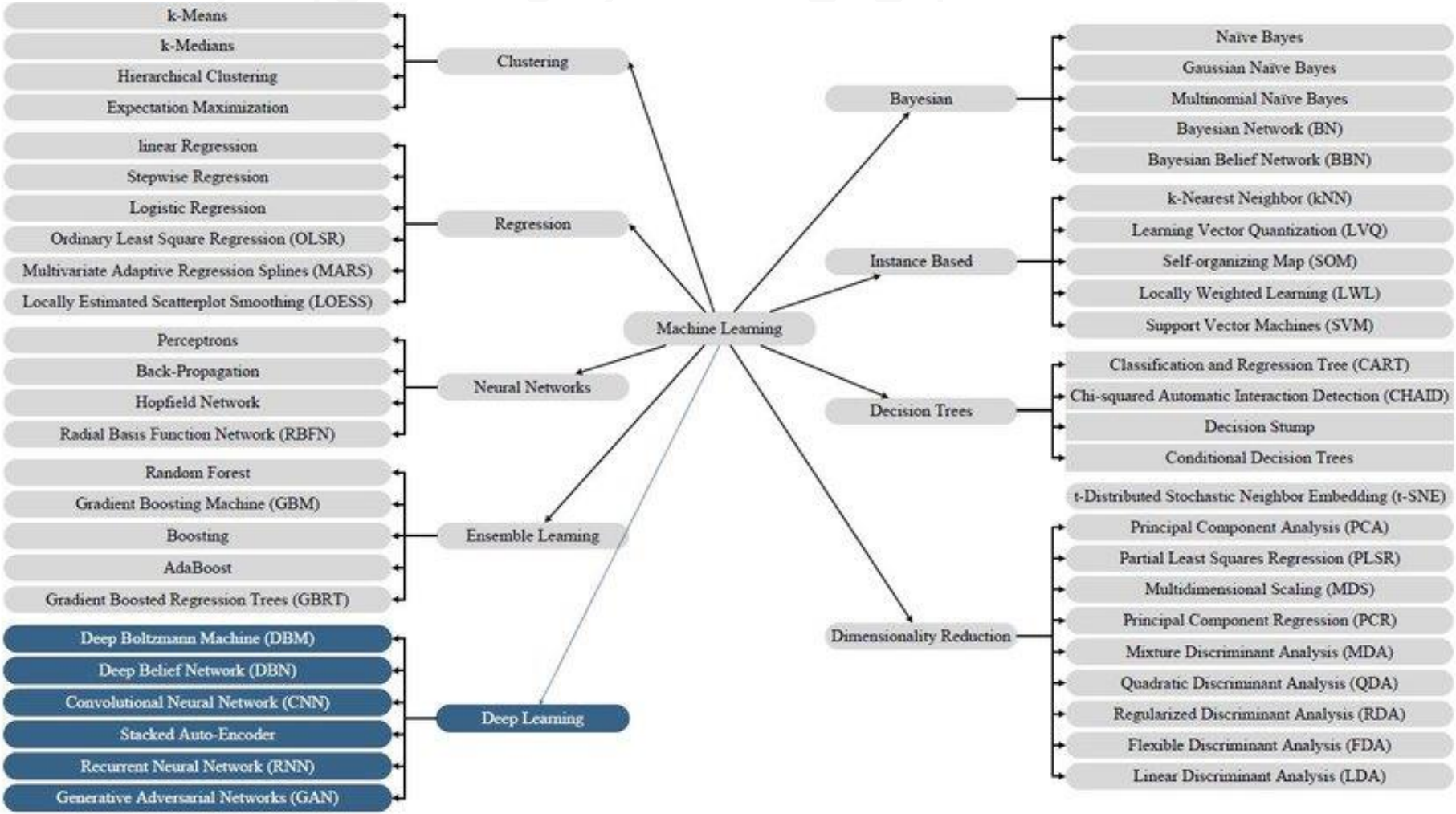
Video Testimonial – Video Feedback

Machine Learning.

- Human's knowledge is only obtained by the experience throughout their life. For machines those knowledge is need to be fed, by collecting enormous amount of data on a certain application and fed to it, machines also obtains the knowledge in short period of time.

- There are three types of Machine Learning

✓ Supervised
✓ Unsupervised
✓ Reinforcement

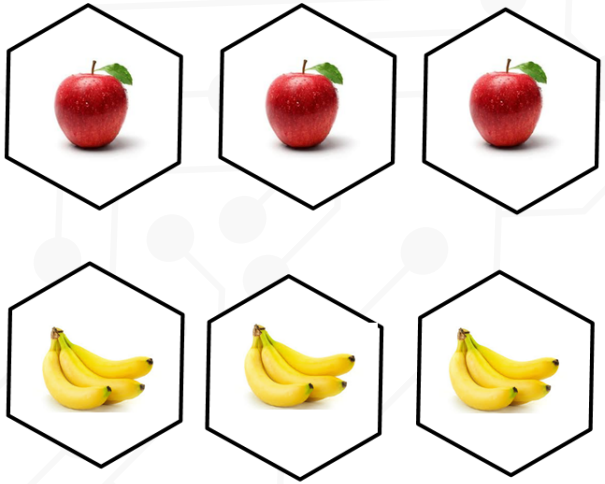

Machine Learning
Clustering
k-Means
k-Medians
Hierarchical Clustering
Expectation Maximization
Regression
linear Regression
Stepwise Regression
Logistic Regression
Ordinary Least Square Regression (OLSR)
Multivariate Adaptive Regression Splines (MARS)
Locally Estimated Scatterplot Smoothing (LOESS)
Neural Networks
Perceptrons
Back-Propagation
Hopfield Network
Radial Basis Function Network (RBFN)
Ensemble Learning
Random Forest
Gradient Boosting Machine (GBM)
Boosting
AdaBoost
Gradient Boosted Regression Trees (GBRT)
Deep Learning
Deep Boltzmann Machine (DBM)
Deep Belief Network (DBN)
Convolutional Neural Network (CNN)
Stacked Auto-Encoder
Recurrent Neural Network (RNN)
Generative Adversarial Networks (GAN)
Bayesian
Naive Bayes
Gaussian Naive Bayes
Multinomial Naive Bayes
Bayesian Network (BN)
Bayesian Belief Network (BBN)
Instance Based
k-Nearest Neighbor (kNN)
Learning Vector Quantization (LVQ)
Self-organizing Map (SOM)
Locally Weighted Learning (LWL)
Support Vector Machines (SVM)
Decision Trees
Classification and Regression Tree (CART)
Chi-squared Automatic Interaction Detection (CHAID)
Decision Stump
Conditional Decision Trees
t-Distributed Stochastic Neighbor Embedding (t-SNE)
Dimensionality Reduction
Principal Component Analysis (PCA)
Partial Least Squares Regression (PLSR)
Multidimensional Scaling (MDS)
Principal Component Regression (PCR)
Mixture Discriminant Analysis (MDA)
Quadratic Discriminant Analysis (QDA)
Regularized Discriminant Analysis (RDA)
Flexible Discriminant Analysis (FDA)
Linear Discriminant Analysis (LDA)

Supervised Learning.

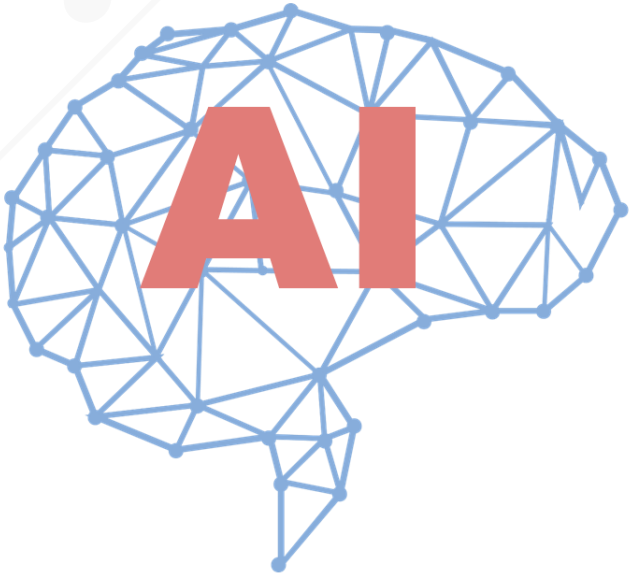
Labelled

Input Data

These are Apple



These are Banana



Model

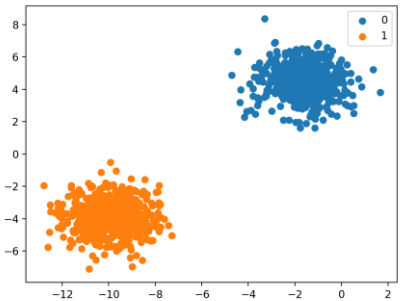
Prediction

Its an Apple

SUPERVISED LEARNING.

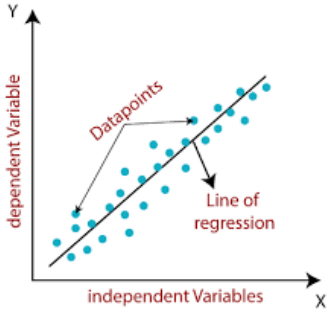
CLASSIFICATION

- Predictive modeling problem where a class label is predicted for a given example of input data.
- Given an example, classify if it is spam or not. Given a handwritten character, classify it as one of the known characters.



PREDICTION/REGRESSION

- It allow us to predict a continuous outcome variable (y) based on the value of one or multiple predictor variables (x). Briefly, the goal of regression model is to build a mathematical equation that defines y as a function of the x variables.
- Continuous rather than discrete



CLASSIFICATION PREDICTIVE MODELLING – SUPERVISED LEARNING.

Binary Classification – Classification tasks that have two class labels

Multi-Class Classification – Classification tasks that have more than two class labels.

Multi-Label Classification – classification tasks that have two or more class labels, where one or more class labels may be predicted for each example.

Imbalanced Classification – classification tasks where the number of examples in each class is unequally distributed.

IMAGE CLASSIFICATION

HAND GESTURE & LEAF DISEASE

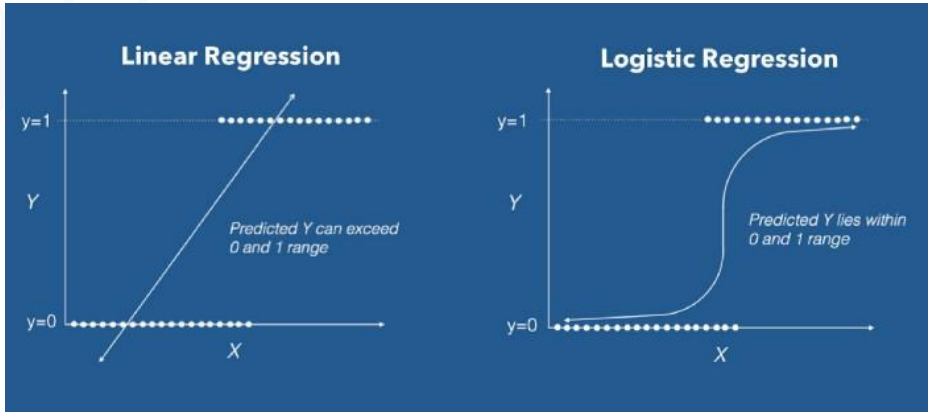
OBJECT RECOGNITION

ROAD SIGN

REGRESSION –SUPERVISED LEARNING.

Linear regression – Linear regression performs the task to predict a dependent variable value (y) based on a given independent variable (x). So, this regression technique finds out a linear relationship between x (input) and y(output).

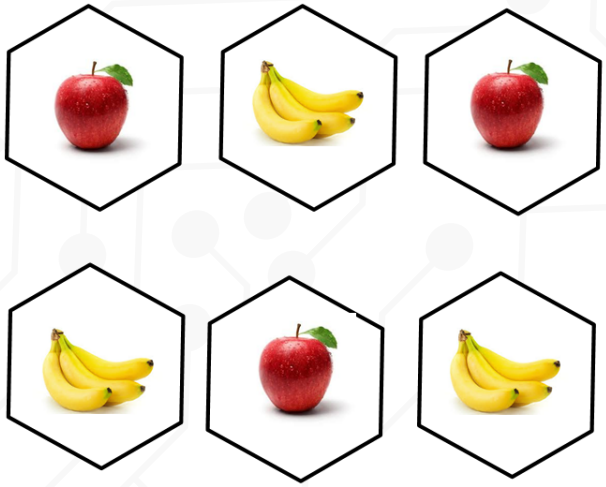
Logistic regression – Logistic regression is a classification algorithm used to assign observations to a discrete set of classes.
It has activation Function
Ex: Email spam or not spam, Online transactions Fraud or not Fraud, Tumor Malignant or Benign.
Logistic regression transforms its output using the logistic sigmoid function to return a probability value.

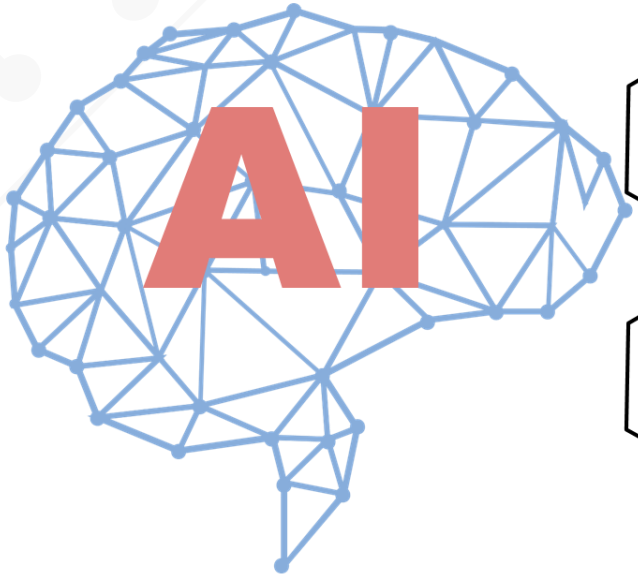


Unsupervised Learning.

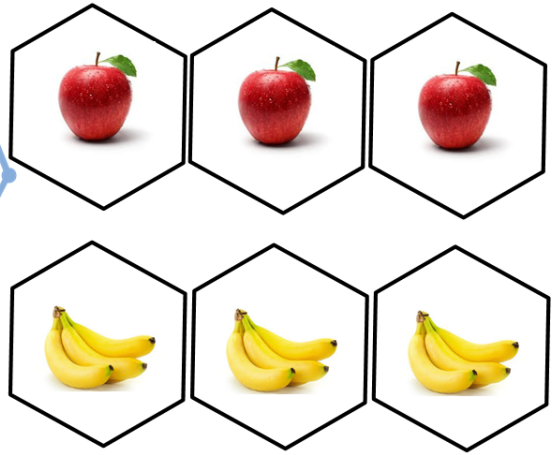
Unlabelled

Input Data



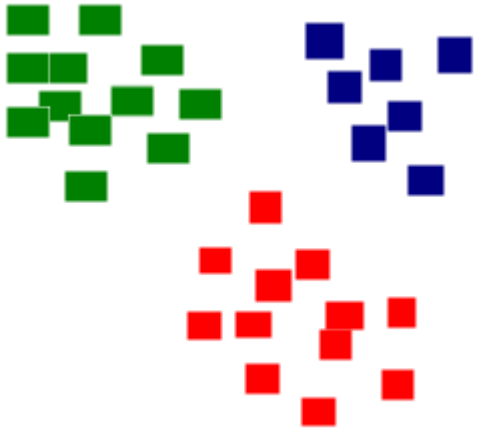


Prediction

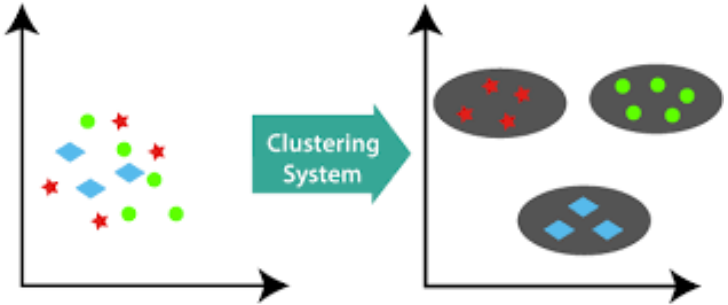


Model

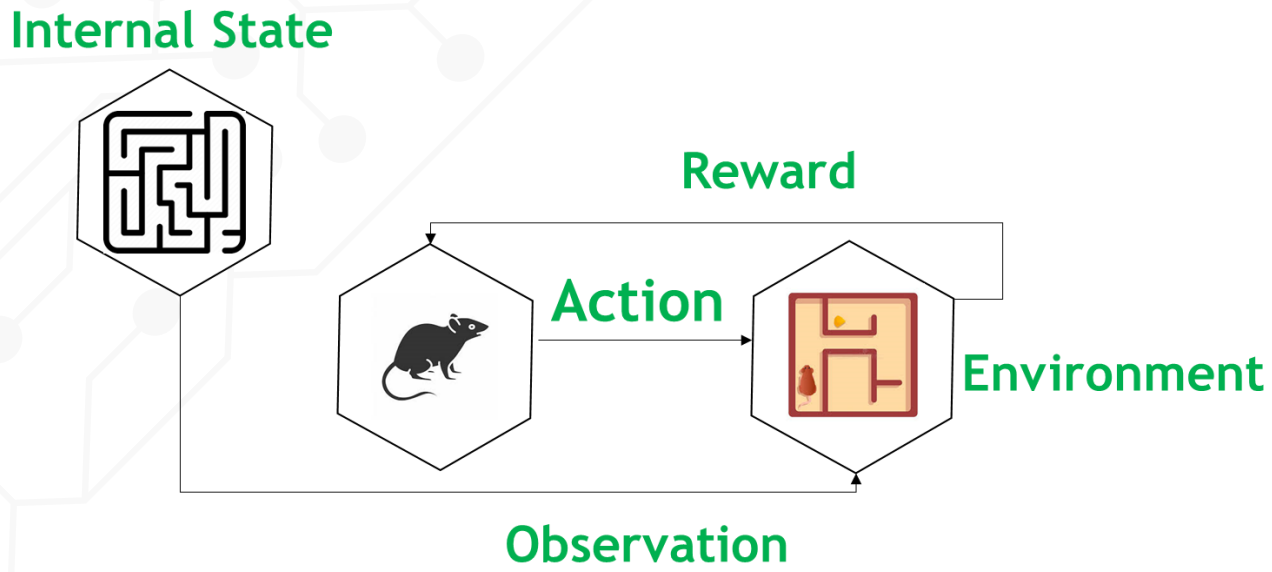
CLUSTERRING – UNSUPERVISED LEARNING.



- Set of inputs is to be divided into groups.
- The groups are not known beforehand, whereas classification knows



Reinforcement Learning.



REINFORCEMENT LEARNING.

- It is about taking suitable action to maximize reward in a particular situation.
- It is employed by various software and machines to find the best possible behavior or path it should take in a specific situation.
- Output depends on the state of the current input and the next input depends on the output of the previous input

✓ **Positive**
✓ **Negative**

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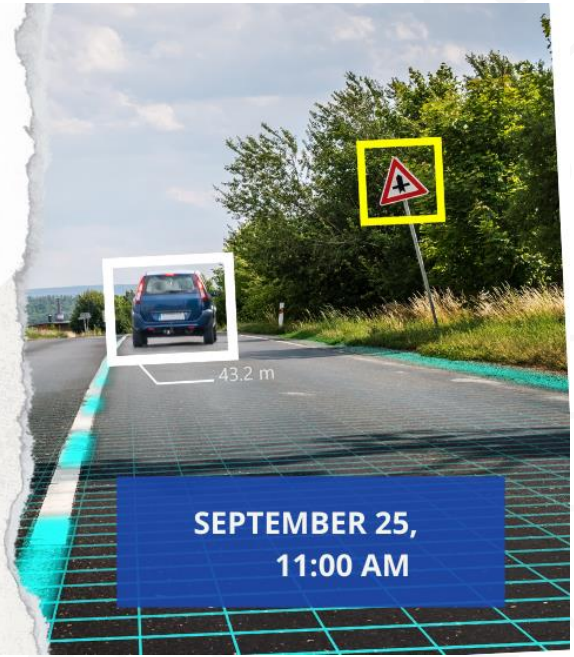

Q & A session

Thanks!

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Tomorrow session

Evaluating & Deploying Machine Learning Algorithm