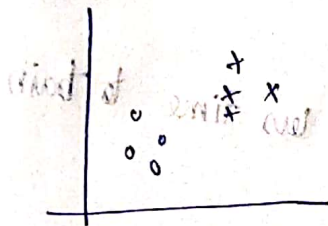


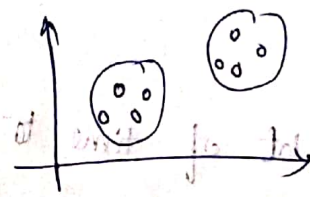
1. Supervised

- Input data is labelled
- uses training dataset
- data is classified based on training dataset
- used for prediction



unsupervised

- Input data is unlabelled
- uses just input dataset
- uses properties of given data to classify it
- used for analysis



2. Linear Regression

- Best fit for linear
- it is not suitable for classification problems

- The output is a predicted integer value
- used for forecasting

Logistic Regression

- Best fit for Curve
- it is useful for classification problems

- The output is a binary value i.e. 1 and 0

- used for image processing

- 3) Shallow Network vs Deep Network
- ⇒ it consists of ~~1~~ 2 layers
 - ⇒ Takes input only as a vector
 - ⇒ Required ^{small} large amount of data
 - ⇒ Takes a lot of time to train
- Deep Network
- ⇒ it consists of more than 2 layers
 - ⇒ Focus on ^{primary} unrelated details
 - ⇒ Required large amount of unlabelled training data
 - ⇒ Takes less time to train

- 4) Universal approximation theorem
- UAT states that a NN with ^{one} ~~small~~ hidden layer can approximate any continuous function for inputs within a specific range.
- ⇒ if the function jumps around or has large gaps, we won't be able to approximate it.

5. Applications of Deep learning

- ⇒ self Driving cars
- ⇒ Entertainment
- ⇒ visual Recognition
- ⇒ virtual Assistant
- ⇒ Fraud Detection
- ⇒ Healthcare
- ⇒ Automatic Game playing

6. Activation function types

⇒ The class of function which transform combined input are called Activation functions

1. Sigmoid function = $\frac{1}{1+e^{-x}}$

range (0 - 1)

2. tanh (range -1 to +1)

3. RELU - Rectifies linear unit

- only +ve

7. VC dimension

→ VC - Vapnik - Chervonenkis

→ the size of the largest set of samples that can be shattered by H

$$M_H(N) = 2^N$$

8. GAN

→ Generative Adversarial Network

→ GAN is a model in which two NN compete with each other to become more accurate in their predictions.

9. Semi supervised algorithms

→ Semi supervised learning is an important category that lies b/t the supervised and unsupervised machine learning.

→ It works intermediate b/w supervised and unsupervised learning algorithms

⇒ it uses labeled and unlabeled datasets

10. Logistic Regression Types

1. Binomial — only 2 dependent variables
2. Multinomial — 3 or more unordered type dependent variables
3. Ordinal — " " ordered type " "