1. Logistic Regression.

$Y=0$

Dependent variable
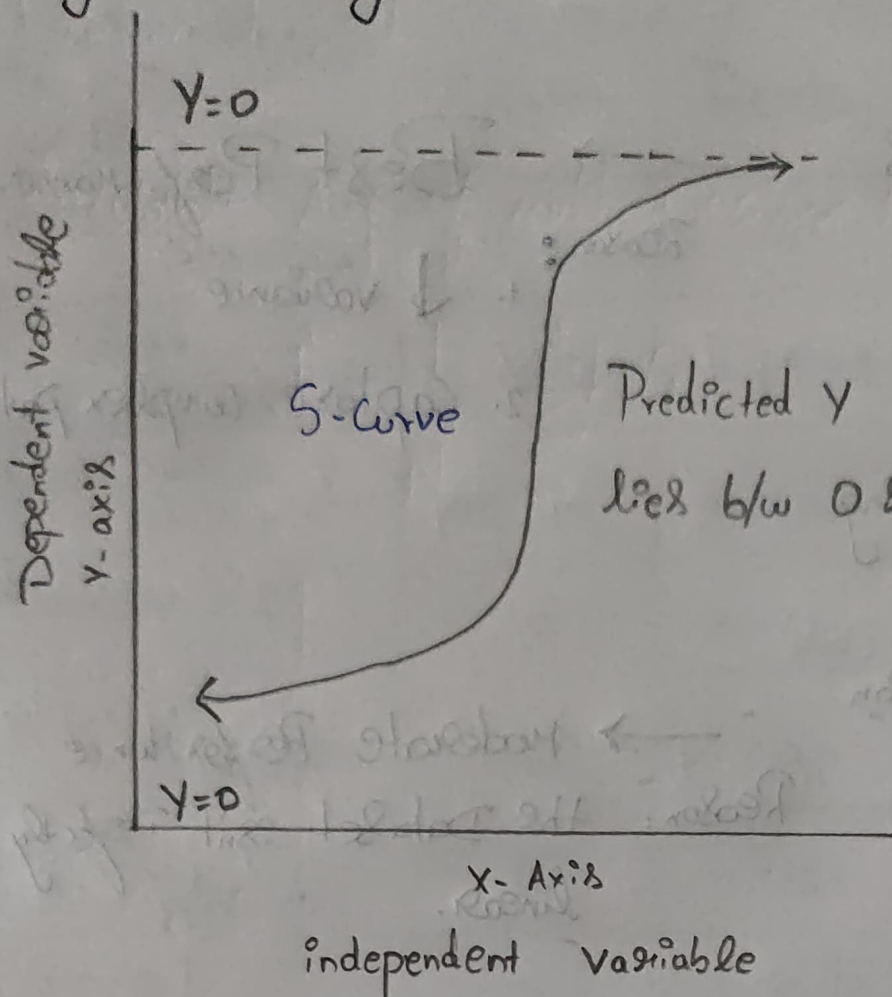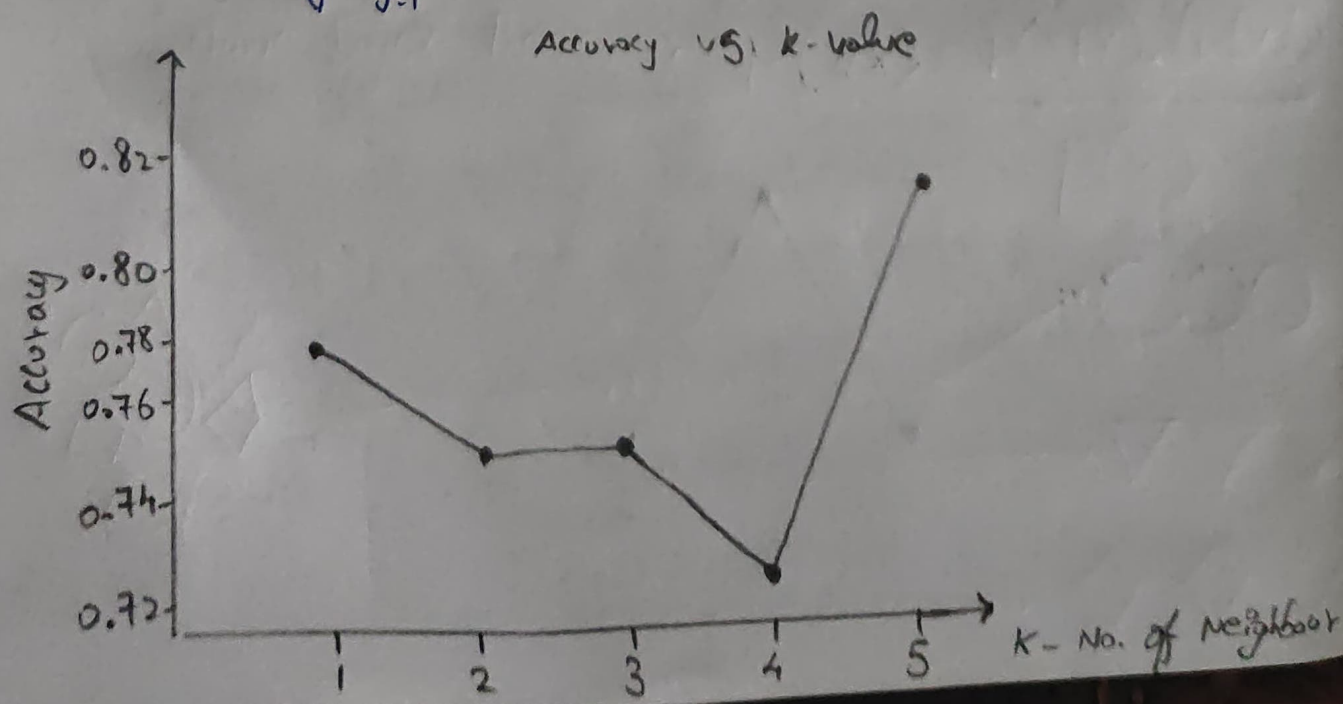Y- axis

S-curve

Predicted Y
lies b/w 0 & 1

$Y=0$

X- Axis
independent variable

formula:

$$\sigma(z) = \frac{1}{1+e^{-x}} \Rightarrow \text{Sigmoid function.}$$

2. KNN

formula: Dist. formula (euclidean Dist.)
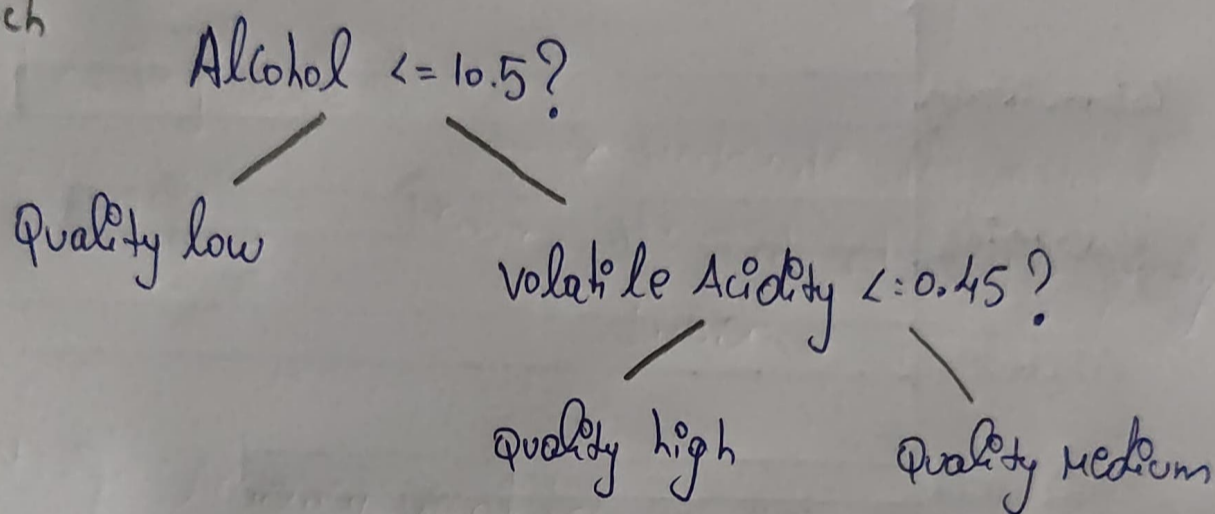
$$d(x, x_i) = \sqrt{\sum_{j=1}^{n} (x_j - x_{ij})^2}$$

Accuracy vs. k-value

Accuracy

0.82
0.80
0.78
0.76
0.74
0.72

2   3   4   5

K - No. of Neighbour

3. Decision Tree :

formula : ↳ ↓ entropy w/t every split

Entropy formula : $(S) = \sum\limits_{i=1}^{c} P_i \log_2 (P_i)$

↓

Measure's Randomness or uncertainty

tree Sketch
(Rough)

Alcohol <= 10.5?

Quality low

volatile Acidity <: 0.45 ?

Quality high   Quality Medium
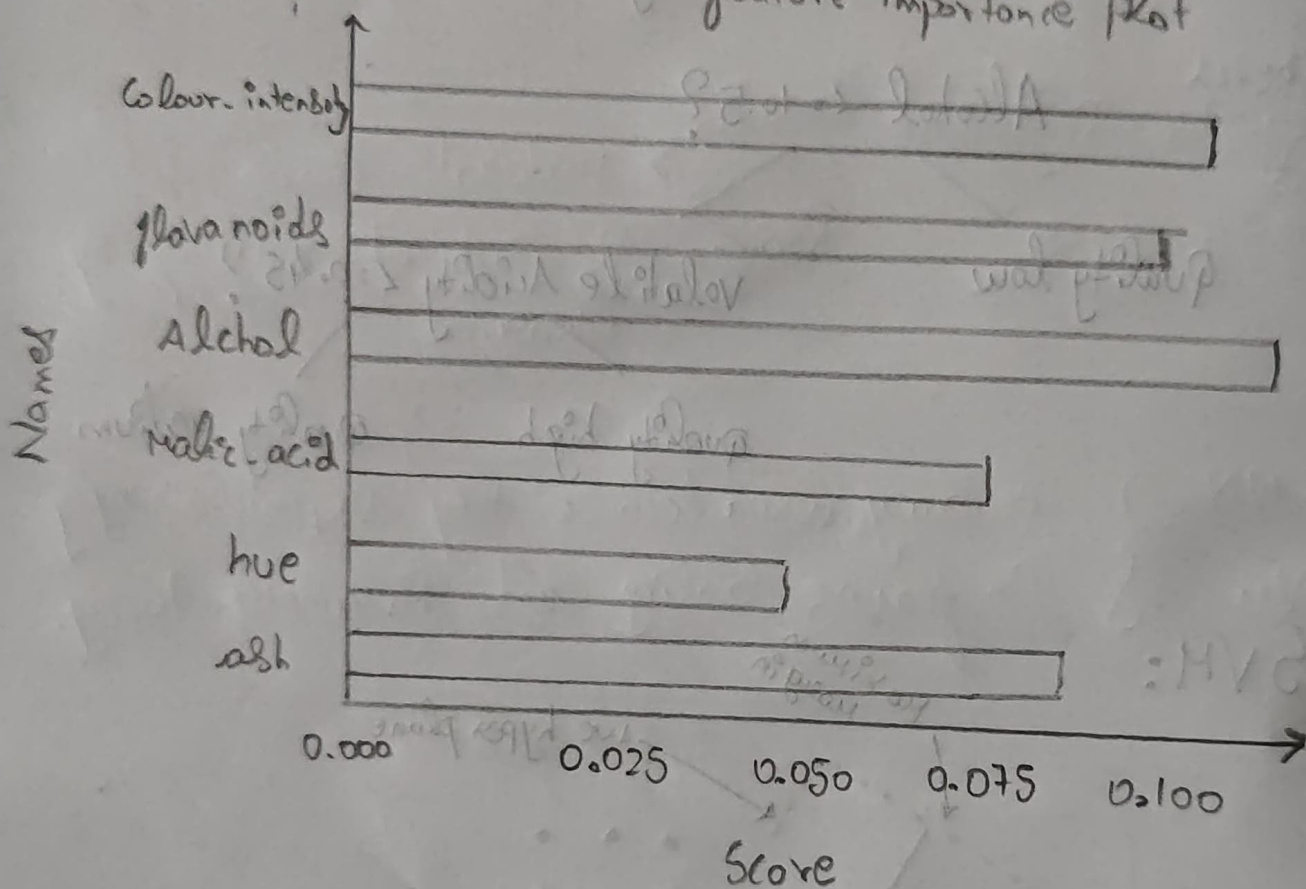
4. SVM :

SVM hyperplane equation ⟶ $w.x - b = 0$

↓

Maximize the Margin b/w two
boundary lines.

5. Random Forest.

Ensemble Avg of mult. Decision tree.
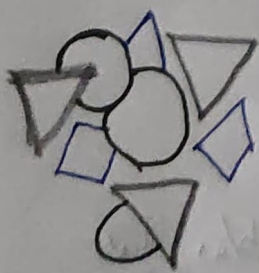
$$\hat{y} = \frac{1}{N} \sum_{i=1}^{N} h_i(x)$$

feature importance plot

6. Naïve Bayes.

Formula:

Naive Bayes theorem $\Rightarrow$ $P(Y/x) = \dfrac{P(x|Y) \cdot (P[Y])}{P(x)}$

7. Neural Network.

formula → $y = f(Wx + b)$

x = input factor W = weight matrix b = bias f = Activation func.

I/p layer

Hidden layer

output layer