Supervised Machine Learning

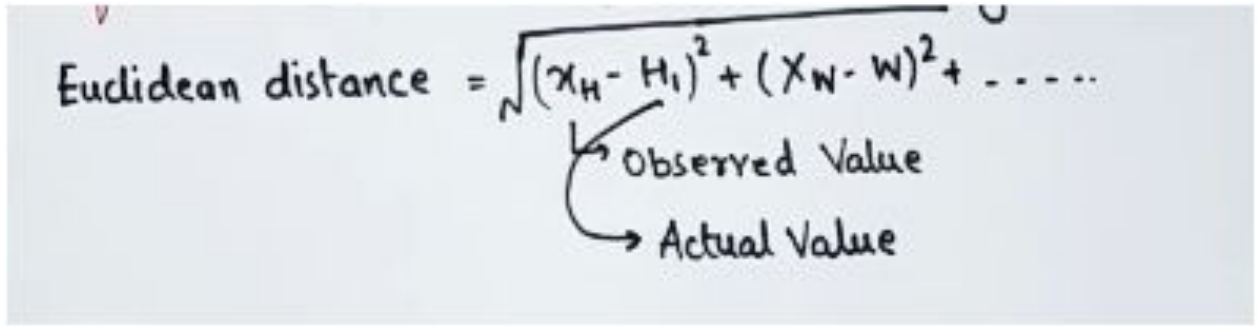
KNN-NN

KNN Numerical

Ques:) Perform KNN-classification Algorithm on following dataset and Predict the class for x ($P_1 = 3$ and $P_2 = 7$). K=3

P_1	P_2	Class
7	7	False
7	4	False
3	4	True
1	4	True

Distance Calculation



$D(X, i) = \sqrt{(3-7)^2 + (7-7)^2} = 4$

$D(X, ii) = \sqrt{(3-7)^2 + (7-4)^2} = \sqrt{16+9} = 5$

$D(X, iii) = \sqrt{(3-3)^2 + (7-4)^2} = 3$

$D(X, iv) = \sqrt{(3-1)^2 + (7-4)^2} = \sqrt{4+9} = 3.6$

Class Identification

$D(x,i) = \sqrt{(3-7)^2 + (7-7)^2} = 4 \longrightarrow N3 \rightarrow FALSE$

$D(x,ii) = \sqrt{(3-7)^2 + (7-4)^2} = \sqrt{16+9} = 5$

$D(x,iii) = \sqrt{(3-3)^2 + (7-4)^2} = 3 \longrightarrow N1 \longrightarrow TRUE$

$D(x,iv) = \sqrt{(3-1)^2 + (7-4)^2} = \sqrt{4+9} = 3.6 \rightarrow N2 \rightarrow TRUE$

$2\,TRUE > 1\,FALSE$

$X(P_1 = 3, P_2 = 7)$ will belong to class TRUE