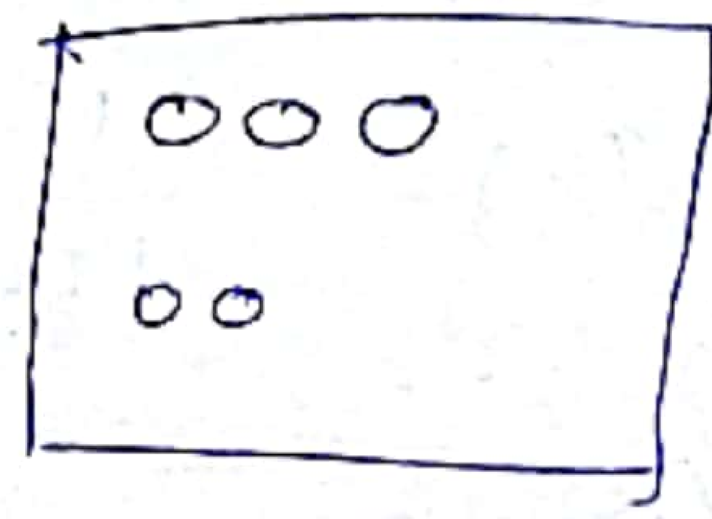
Day-3

> Naive Baye's theorm:- {Classification} "=" {Bayes theorm}

eg:-

Dependent Event



(red)

(green)

First Event:-

$P(R) = \frac{3}{5}$

Sec Ev:-

$P(G) = \frac{2}{4} = 1/2$

$P(R \& G) = P(R) * P(G/R)$

$[P(R\&G) = P(G \& R)]$

$P(A) * P(B/A) = P(B) * P(A/B)$

$$\boxed{P(B/A) = \frac{P(B) * P(A/B)}{P(A)}}$$

(RUX theorm, Naive Bayes)

Indepedent Event

$B = \{1, 2, 3, 4, 5, 6\}$

P(B) of getting 6

$= \frac{1}{6}$

P(B) of 1

$= P(B) = \frac{1}{6}$

Eg:-

$$\overbrace{\underline{x_1} \quad x_2 \quad - \; - \; - \quad x_n}^{I/P} \qquad Y \; O/P$$

$$P(y/x_1, x_2 -- x_n) = \frac{P(y) * P(x_1 x_2 -- x_n/y)}{P(x_1, x_2 --- x_n)}$$

$$= \frac{P(y) * P(x_1/y_1) * P(x_2/y_2) --- P(x_n/y_n)}{P(x_1) * P(x_2) --- P(x_n)}$$

Dataset

	$\underline{x_1}$	$\underline{x_2}$	$\underline{x_3}$	$\underline{x_4}$	$\underline{y}$
x_i					Y
x_i					N

$$P(y=Y/x_i) = \frac{P(Yes) * P(x_1/yes) * -- P(x_4/yes)}{P(x_1) * P(x_2) * P(x_3) * P(x_4)}$$

$$P(y=N/x_i) = \frac{P(No) * P(x_1/No) --- P(x_4/No)}{P(x_1) * --- P(x_4)}$$

$x_i \to$ Yes
$\quad\;\to$ No

if $P(Yes/x_i) = 0.13$ $\qquad P(No/x_i) = 0.05$

in Binary Classification

any value $\geq 0.5 \Rightarrow 1$

$< 0.5 \Rightarrow 0$

Since Both Value below 0.5
we do normalisation

$$P(Yes/xi) = \frac{0.13}{0.13 + 0.05}$$

$$= 0.72 \Rightarrow 72\%$$

$$P(No/xi) = \frac{\cancel{0.05}}{} \; 1 - 0.72$$

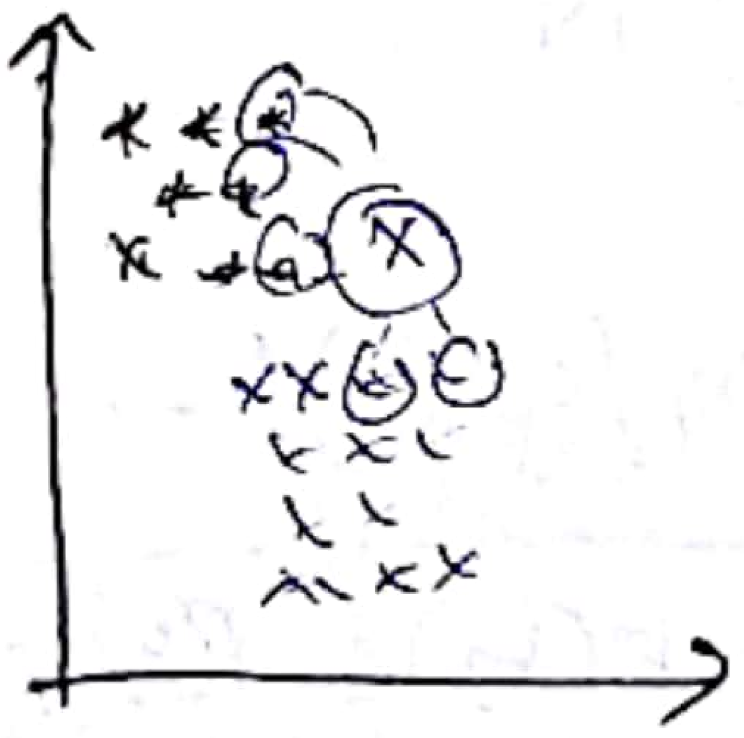
$$= 28\%$$

KNN Algorithm (K-nearest neighbour)

Classification Regression

Bad at
① Outlier's
② Imbalanced

① classification

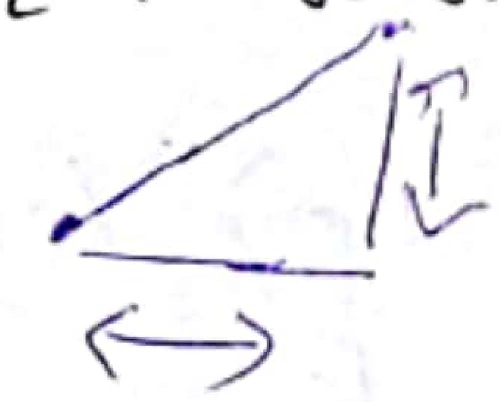


Black = 8
Blue = 13
K = 5

In classification we find Output by using

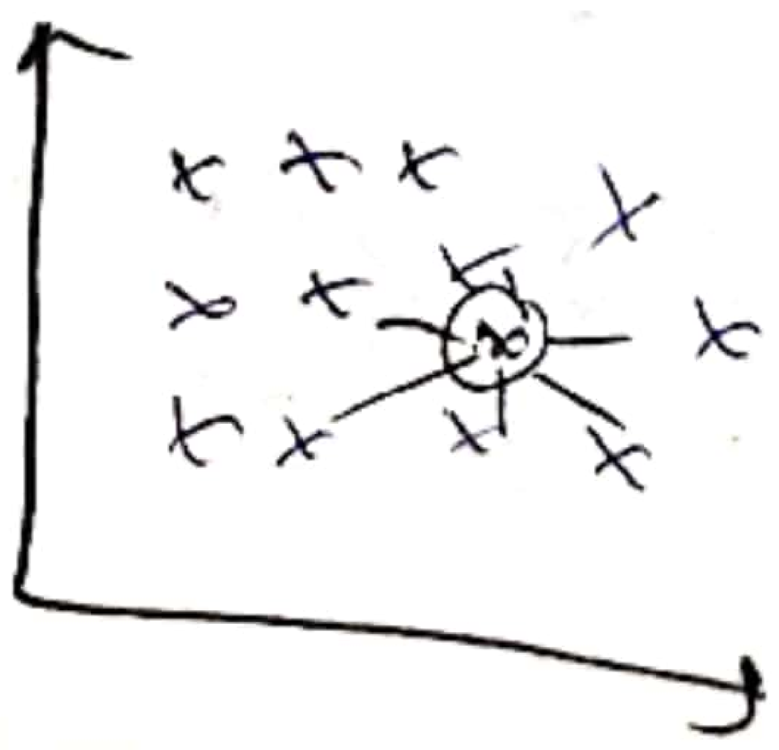
Euclidean Distance (or) Manhattan Distance

$(\sqrt{(x_2-x_1)^2+(y_2-y_1)^2})$ $(|x_2-x_1| \, |y_2-y_1|)$



(cpath Value chepudi) (Side path Value chepudi)

② Regression



In regression it's take
Avg from all points to it's
points