

Naive Bayes

CL MI algo \rightarrow classification, e.g.

(2) Assumption: All inputs are independent ~~indep~~

stat Asmt-2

~~26 point summary - ready~~

Prahast Prasad
sec 2
2012ac 05256



$\frac{1}{4}$ boys $\frac{3}{4}$ girls

$$P(\text{Boy} \mid \text{Pass Maths}) = 0.12$$

$$P(\text{Girl} \mid \text{Pass Maths}) = 0.2$$

TPA \rightarrow

$$\begin{aligned} P(\text{Pass}) &= P(\text{Boy}) \times P(\text{Pass} \mid \text{Boy}) + P(\text{Girl}) \times P(\text{Pass} \mid \text{Girl}) \\ &= \frac{1}{4} \cdot 0.12 + \frac{3}{4} \cdot 0.2 = 0.03 + 0.15 \\ &= 0.18 \end{aligned}$$

(1) (2)

Type 1 - 2 ball \Rightarrow 5R 7W 8BType 2 - 3 ball \Rightarrow 6R 9W 5B

$$P(\text{ball 1 white}) = P(B_1 \cap W)$$

$$= \frac{P(B_1 \cap W)}{P(W)} = \frac{P(B_1 \cap W)}{P(W)}$$

cross off freq. on P(W) \Rightarrow $P(W|B_1) \cdot P(B_1) +$ freq. come 3W \Rightarrow $P(W|B_2) \cdot P(B_2)$ $B_1 \& B_2 \rightarrow$ mutually exclusive &
exhaustive $\therefore P -$

$$+ \frac{P(B_1 \cap W)}{P(W)}$$

$$\Rightarrow \frac{2}{5} + \frac{3}{5}$$

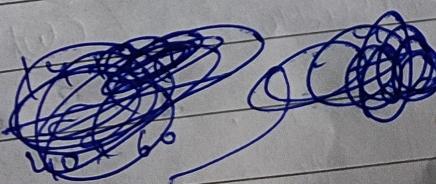
$$P(\text{Ball 1 white}) = \frac{\text{Total ball & white ball}}{\text{Total balls}}$$

$$\frac{7 \times 2}{20 \times 2 + 20 \times 3} = \frac{14}{100}$$

Prakash Prasad

Sec 2

2022 ac 08256



$$= \frac{14}{100}$$

$$= \frac{14}{100} = \frac{14}{100}$$

$$= \frac{14}{100}$$

control

op

os lock

tab

esc

1

(4)

Let $X \rightarrow$ actual no. post throw
Statement \rightarrow c Dice shows 4

~~$P(X=4)$~~ ~~$P(X=4)$~~

~~$P(X=4)$~~

~~$P(X=4)$~~ Statement = True

~~$P(X=4)$~~ ~~$P(X=4)$~~

$$P(X=4) = P(X=4) \text{ Statement} = \text{True} + P(\text{Statement} = \text{True})$$

$$P(X=4) \text{ Statement} = \text{False} + P(\text{Statement} = \text{False})$$

Statement = {True, False} + Mutually exclusive & exhaustive - \therefore Total probability theorem

$$= 1 \cdot \frac{3}{4} + 0 \cdot \frac{1}{4} = \frac{3}{4}$$

Prakash Prasad
Sce-2

2022ac05206