Naive Bayes Algo :-

Imp. Formula

Bayes Theorem :-

$$P(A|B) = \frac{P(B|A) \cdot P(A)}{P(B)}$$

Bag I :- 5W & 2R ⟶ W = 5/7

Bag II :- 4W & 3R → R = 3/7

Bag I :- 5W & 2R $\longrightarrow$ $\frac{1}{2}$, 2/7 //

Bag II :- 4W & 3R $\longrightarrow$ $\frac{1}{2}$, 3/7 //

$Bag_I \cdot Bag_{II} = \frac{1}{2} \times \frac{2}{7} \; (+) \; \frac{1}{2} \times \frac{3}{7} = \frac{2}{14} + \frac{3}{14}$

Bug A // = 0.357 //

$$P(B_2|R) = \frac{P(R|B_2) \cdot P(B_2)}{P(R)}$$

$$= \frac{(3/7) \times (1/2)}{0.35}$$

Likelihood probability

prior

evidence probability or Marginal

$$P(B_2|R) = 0.61$$

$$\text{Posterior Probability} = \frac{(\text{Likelihood probability}) \times (\text{Prior probability} \text{ or } (\text{Conditional Probability}))}{(\text{Marginal or Evidence probability})}$$

$$P(y|x) = \frac{P(x|y) \cdot P(y)}{P(x)}$$

$$P(Y \mid \{x_1, x_2, x_3\}) =$$

$$\frac{P(x_1|Y) \cdot P(x_2|Y) \cdot P(x_3|Y) \times P(Y)}{P(x_1) \cdot P(x_2) \cdot P(x_3)}$$

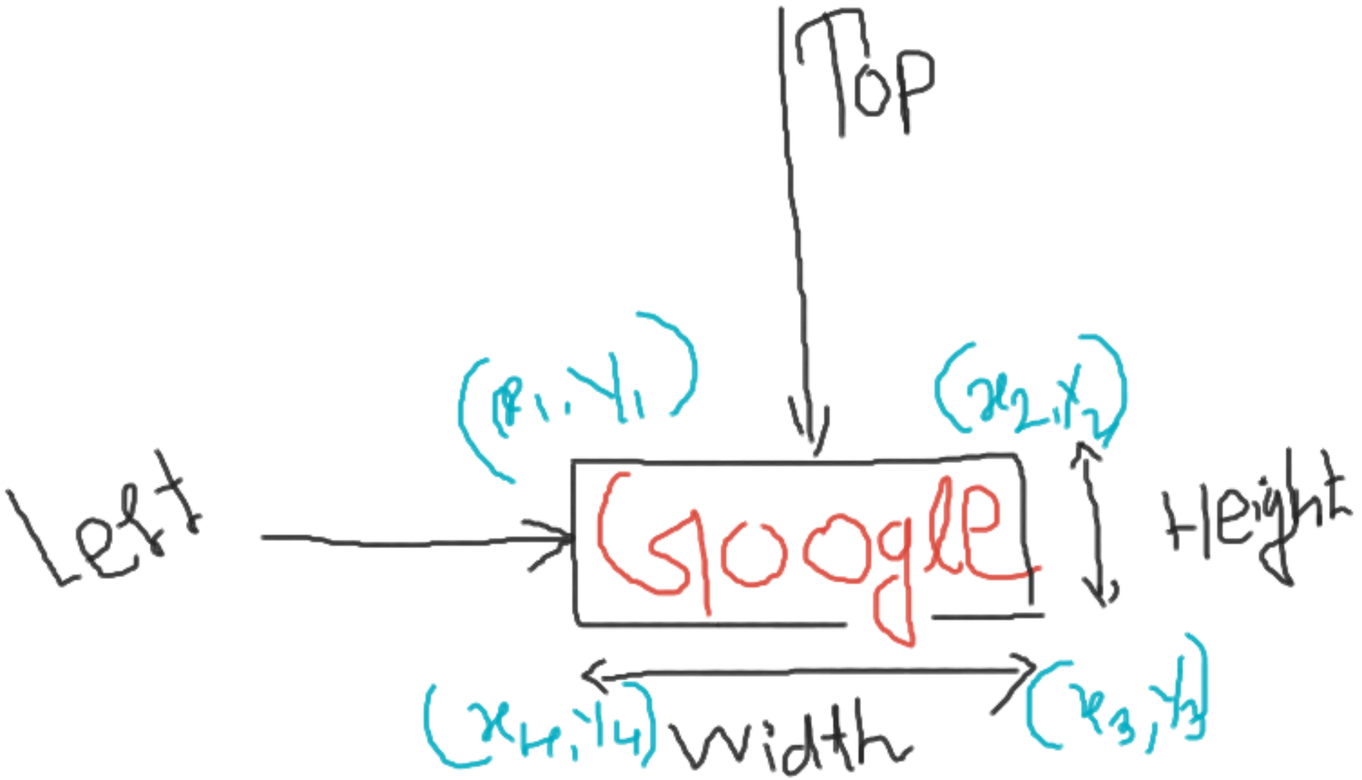
$$P(Y \mid \{x_1, x_2, x_3\}) = \frac{P(Y) \prod_{i=1}^{n} P(x_i \mid Y)}{P(x_i)}$$

Posterior Probability $\propto$ (Likelihood probability * prior probability)

$$P(y|x_1, x_2, x_3) \propto P(y) \prod_{i=1}^{n} P(x_i|y)$$

$$P(N \mid \{x_1, x_2, x_3\}) = \frac{P(x_1 \mid N) \cdot P(x_2 \mid N) \cdot P(x_3 \mid N) \times P(N)}{P(x_1) \cdot P(x_2) \cdot P(x_3)}$$

$$\propto \frac{P(N) \cdot \prod_{i=1}^{n} P(x_i \mid N)}{}$$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(x_1, y_1)
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