

# ML Assignment Bayes classifical.

K. Pavan Vitesh  
AP21110011080  
CSE-Q

Given,

$$P(+ | \text{Present}) = 0.98$$

$$P(- | \text{Not Present}) = 0.97$$

$$P(\text{Present}) = 0.008$$

We can get

$$P(+ | \text{Not Present}) = 1 - P(- | \text{Not present}) = 1 - 0.97 = 0.03$$

$$P(\text{Not present}) = 1 - P(\text{Present}) = 1 - 0.008 = 0.992$$

We have to get

$$P(\text{Present} | +) = \frac{P(+ | \text{Present}) * P(\text{Present})}{P(+)}$$

$$= \frac{0.98 \times 0.008}{P(+)} = \frac{0.00784}{P(+)}$$

~~$$P(\text{Negative} | +) = \frac{P(+ | \text{Negative}) P(\text{Negative})}{P(+)}$$~~

$$P(\text{Not present} | +) = \frac{P(+ | \text{Not present}) P(\text{Not present})}{P(+)}$$

$$= \frac{0.03 \times 0.992}{P(+)} = \frac{0.03}{P(+)}$$

The probability of Not present is higher. So Patient whose report is +ve may not actually have the Cancer.