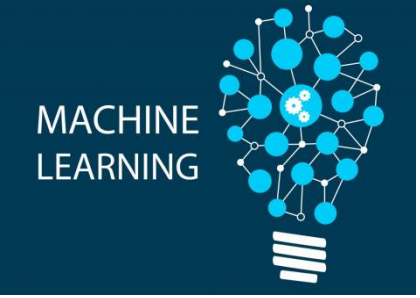

Naïve Bayes - Classification

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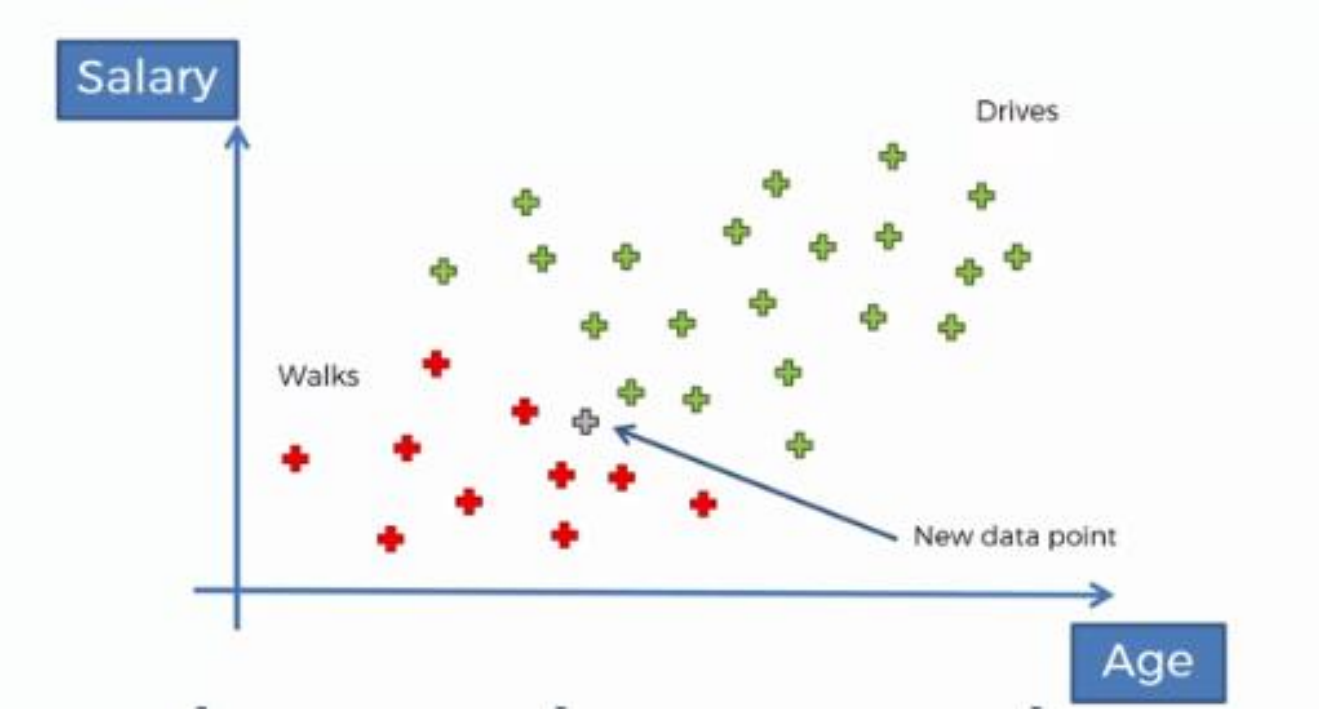
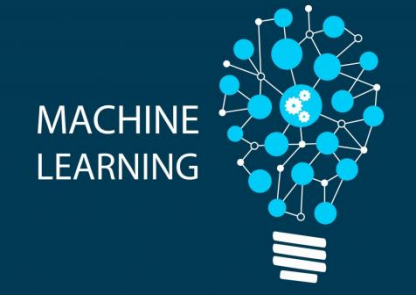
MACHINE LEARNING

- Classify the new point
- Total number of observations = 30



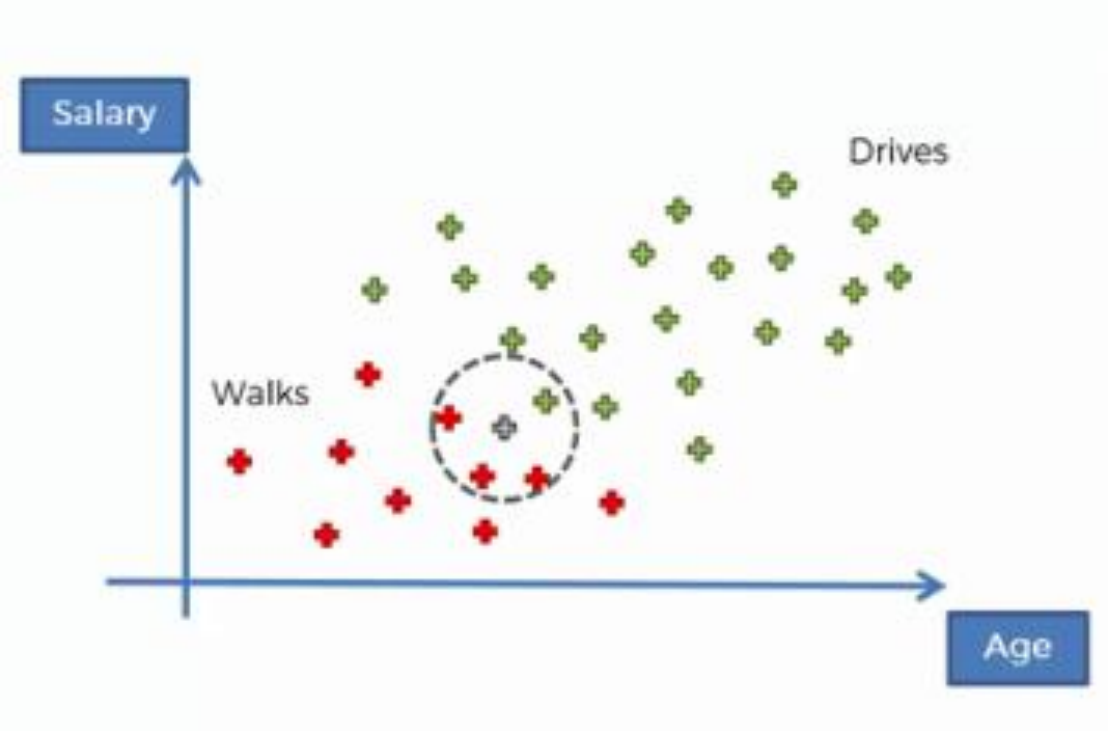


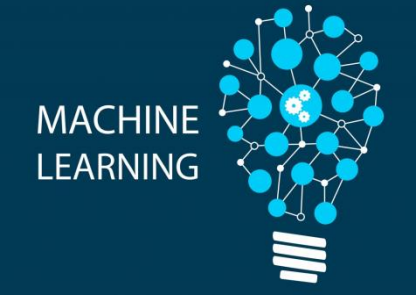
- Bayes Theorem –

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

MACHINE LEARNING

- Create a radius around the new data point. This radius is selected randomly.
- Look at all the points inside the circle, they are all similar to the new point that we have





$$P(Walks|X) = \frac{P(X|Walks) * P(Walks)}{P(X)}$$

Where,

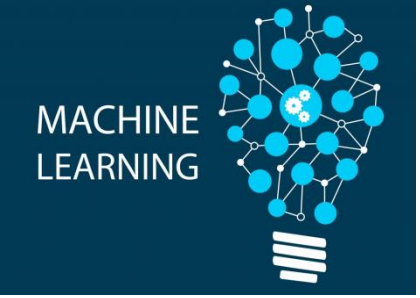
P(Walks) = Prior Probability = $\frac{\text{Number of walkers}}{\text{Total Observations}}$ = 10/30

P(X) = Marginal Likelihood = $\frac{\text{Number of Similar Observations}}{\text{Total Observations}}$ = 4/30

P(X|Walks) = Likelihood

= $\frac{\text{Number of similar observations among those who walk}}{\text{Total number of walkers}}$ = 3/10

P(Walks|X) = Posterior Probability = 0.75



$$P(Drives|X) = \frac{P(X|Drives) * P(Drives)}{P(X)}$$

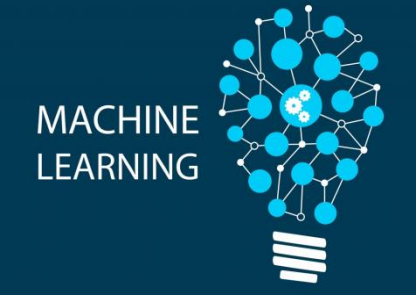
Where,

$P(Drives)$ = Prior Probability

$P(X)$ = Marginal Likelihood

$P(X|Drives)$ = Likelihood

$P(Drives|X)$ = Posterior Probability



P(Walks | X) *v.s.* P(Drives | X)

0.75 *v.s. 0.25*