Bayes' Theorem

It is used in Naive Bayes' (Supervised Learning Classification) Algorithm. (E.g. Gmail uses it to classify the spam emails)

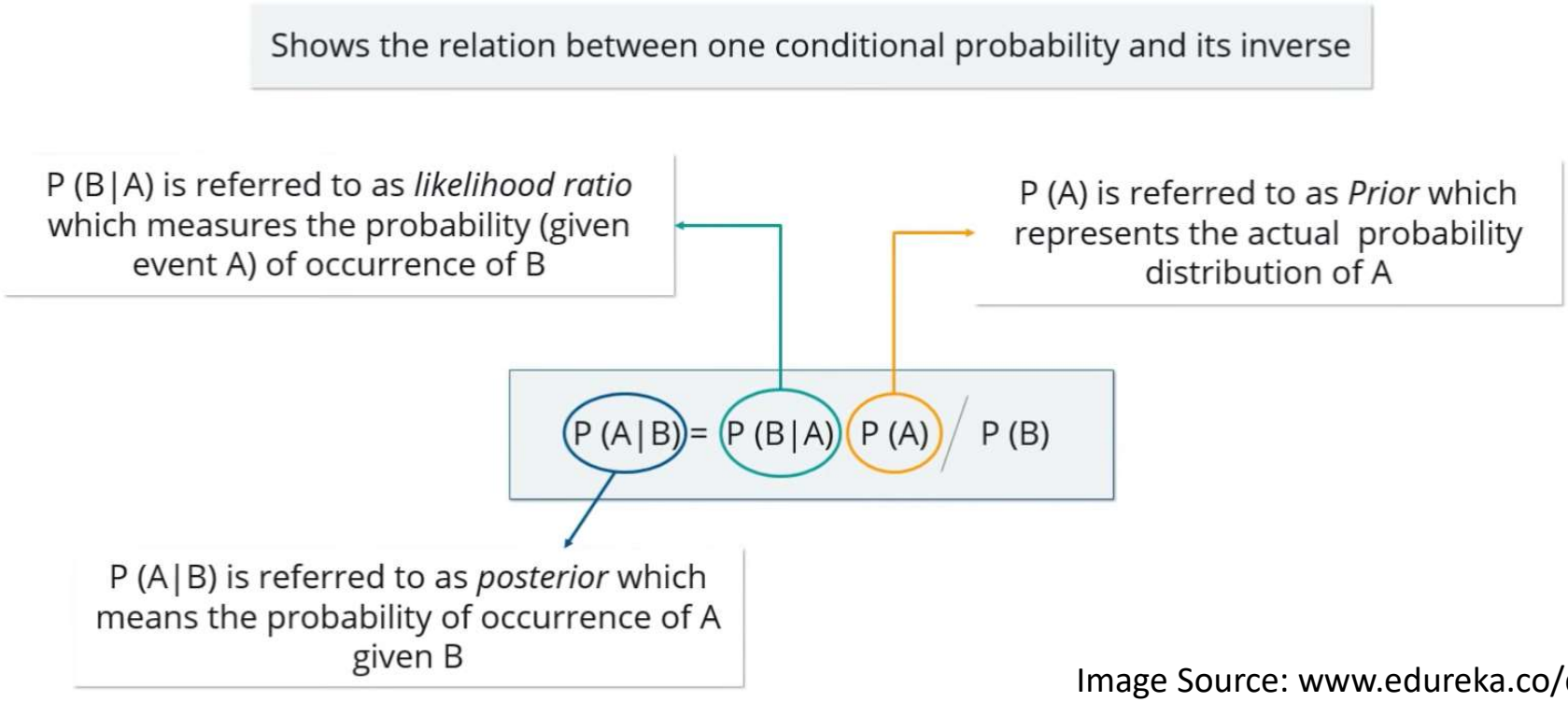

Image Source: www.edureka.co/data-science

Bayes' Theorem

Let A_1, A_2, ….,A_K be a collection of K mutually exclusive and exhaustive events with probability P (A_i) i = 1, 2, …., K

Then for any event B for which P(B) > 0,

$$P(A_j \cap B) = \frac{P(A_j \mid B)}{P(B)}$$

$$= \frac{P(B \mid A_j)\, P(Aj)}{\sum P(B \mid Aj)\, P(Aj)}$$