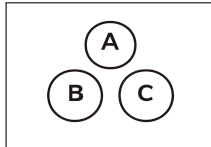


11

Discrete Distribution Independant Events

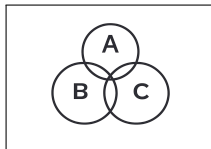
A



$$P(A) = 0.40$$

$$P(B) = 0.70$$

$$\square(A, B) = \text{thumbs up}$$



$$\square(A, B) \rightarrow P(A|B) = P(A)$$

$$\square(A, B) \rightarrow P(A \cap B) = P(A) \times P(B)$$

$$\square(A, B) \rightarrow P(A \cup B) = P(A) + P(B) - P(A) \times P(B)$$

$$\square(A, B) \rightarrow P(A \cup B) = 0.40 + 0.70 - 0.40 \times 0.70$$

$$\square(A, B) \rightarrow P(A \cup B) = 0.82$$



$$P(C) = 2 \times P(D)$$

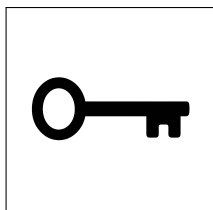
$$P(C \cap D) = P(C) \times P(D) = 0.15$$

$$P(C^C \cap D^C) = ?$$

11

Discrete Distribution Independant Events

A



$$P(D) = p$$
$$P(C) = 2p$$

$$P(C \cap D) = P(C) \times P(D) = (2p)(p) = 2p^2 = 0.15$$
$$2p^2 = 0.15 \Rightarrow p^2 = 0.075 \Rightarrow p = \sqrt{0.075} \approx 0.2739$$

$$P(D) \approx 0.2739$$
$$P(C) = 2p \approx 0.5478$$

$$P(C \cup D) = P(C) + P(D) - P(C \cap D)$$
$$P(C \cup D) \approx 0.5478 + 0.2739 - 0.15 = 0.6717$$

$$P(C^C \cap D^C) = 1 - 0.6717 \approx 0.33$$