20162090 6 박수연 hw-4

구하려는 값 : $P(B|A)$

주어진값 : $P(A) = \alpha$ , $P(B) = \gamma$

maximizing the entropy

$P_1 = P(A, B) = \alpha \times \gamma$

$P_2 = P(A, \neg B) = \alpha(1-\gamma)$

$P_3 = P(\neg A, B) = (1-\alpha)\gamma$

$P_4 = P(\neg A, \neg B) = (1-\alpha)(1-\gamma)$

→ • A와 B가 독립적이라고 둔다.
• $P(A,B) = P(A) \cdot P(B)$ 라고 한다.

constraints.

$$P_1+P_2 = \alpha\gamma + \alpha - \alpha\gamma = \alpha = P(A)$$

$$P_1+P_3 = \alpha\gamma + \gamma - \alpha\gamma = \gamma = P(B)$$

$$P_1+P_2+P_3+P_4 = \alpha\gamma + \alpha - \alpha\gamma + \gamma - \alpha\gamma + 1 + \alpha\gamma - \alpha - \gamma = 1$$

정의에 따라서

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

for $P(A) \neq 0$ follows

$$P(B|A) = P(B)$$

for $P(A) = 0$ , $P(B|A)$ stays undefined.

| A | B | A ⇒ B | P(A) | P(B) | P(B\|A) |
|---|---|---|---|---|---|
| t | f | t | $\alpha$ | $\beta$ | $\beta$ |
| f | t | t | 0 | $\gamma$ | Undefined. |