

1. 我们记 $A = \text{rain}$, $B = \text{predict}$

由题意, $P(A) = 0.014$, $P(\bar{A}) = 0.986$, $P(B|A) = 0.9$, $P(B|\bar{A}) = 0.1$

$P(A|B) = \alpha P(A|B)$ 我们应用归一化推理:

$$\begin{aligned} \langle P(A|B), P(\bar{A}|B) \rangle &= \alpha \langle P(A|B), P(\bar{A}|B) \rangle \\ &= \alpha \langle P(B|A)P(A), P(B|\bar{A})P(\bar{A}) \rangle \\ &= \alpha \langle 0.0126, 0.0986 \rangle \\ &= \langle 0.1133, 0.8867 \rangle \end{aligned}$$

$$\therefore P(\text{rain}|\text{predict}) = P(A|B) = 0.1133$$

