

Outlook

Sunny

$$E(\text{Sunny}) = -\frac{2}{5} \log_2\left(\frac{2}{5}\right) - \frac{3}{5} \log_2\left(\frac{3}{5}\right) = 0.971$$

Overcast

Yes

$$E(\text{Sunny} | \text{Temp.}) = \left(\frac{2}{5} \cdot 0\right) + \left(\frac{2}{5} \cdot 1\right) + \left(\frac{1}{5} \cdot 0\right) = 0.4$$

$$= 0.971 - 0.4 = 0.571$$

$$E(\text{Sunny} | \text{Humidity}) = \left(\frac{3}{5} \cdot 0\right) + \left(\frac{2}{5} \cdot 0\right) = 0$$

$$= 0.971 - 0 = 0.971 \leftarrow \text{Best}$$

$$E(\text{Sunny} | \text{Wind}) = \left(\frac{2}{5} \cdot 0\right) + \left(\frac{3}{5} \cdot 0.918\right) = 0.551$$

$$= 0.971 - 0.551 = 0.420$$

Rain

$$E(\text{Rain}) = -\frac{3}{5} \log_2\left(\frac{3}{5}\right) - \left(\frac{2}{5}\right) \log_2\left(\frac{2}{5}\right) = 0.971$$

$$E(\text{Rain} | \text{Temp}) = \left(\frac{3}{5} \cdot 0.918\right) + \left(\frac{2}{5} \cdot 1\right) = 0.951$$

$$= 0.971 - 0.951 = 0.020$$

$$E(\text{Rain} | \text{Humidity}) = \left(\frac{2}{5} \cdot 1\right) + \left(\frac{3}{5} \cdot 0.918\right) = 0.951$$

$$= 0.971 - 0.951 = 0.020$$

$$E(\text{Rain} | \text{Wind}) = \left(\frac{3}{5} \cdot 0\right) + \left(\frac{2}{5} \cdot 0\right) = 0$$

$$= 0.971 - 0 = 0.971 \leftarrow \text{Best}$$

