- entropy of S

$$S = \{D1, ..., D14\} = [9+, 5-]$$
$$H(S) = -\frac{9}{14} \cdot \log_2 \frac{9}{14} - \frac{5}{14} \cdot \log_2 \frac{5}{14} = 0.940$$

- information gain (e.g. $Wind$)

$$S_{Weak} = \{D1, D3, D4, D5, D8, D9, D10, D13\} = [6+, 2-]$$
$$S_{Strong} = \{D2, D6, D7, D11, D12, D4\} = [3+, 3-]$$

$$\begin{aligned} Gain(S, Wind) &= H(S) - \sum_{v \in Wind} \frac{|S_v|}{|S|} \cdot H(S_v) \\ &= H(S) - \frac{8}{14} \cdot H(S_{Weak}) - \frac{6}{14} \cdot H(S_{Strong}) \\ &= 0.940 - \frac{8}{14} \cdot 0.811 - \frac{6}{14} 1.000 \\ &= 0.048 \end{aligned}$$