

Conditional Entropy: Complete Definition

$$\begin{aligned} H(X_{meat} / X_{eats}) &= \sum_{u \in \{0,1\}} [p(X_{eats} = u) H(X_{meat} | X_{eats} = u)] \\ &= \sum_{u \in \{0,1\}} [p(X_{eats} = u) \sum_{v \in \{0,1\}} [-p(X_{meat} = v | X_{eats} = u) \log_2 p(X_{meat} = v | X_{eats} = u)]] \end{aligned}$$

In general, for any discrete random variables X and Y , we have $H(\mathbf{X}) \geq H(\mathbf{X} | \mathbf{Y})$

What's the **minimum** possible value of $H(X|Y)$?