

# Generative Process for $Y|X = x$ (FIMEC)

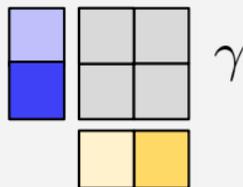
$$\mathbb{X} = \begin{array}{|c|} \hline \text{light blue} \\ \hline \text{dark blue} \\ \hline \end{array} \times \begin{array}{|c|} \hline \text{light red} \\ \hline \text{dark red} \\ \hline \end{array} \quad \mathbb{Y} = \begin{array}{|c|} \hline \text{light yellow} \\ \hline \text{dark yellow} \\ \hline \end{array} \times \begin{array}{|c|} \hline \text{light green} \\ \hline \text{dark green} \\ \hline \end{array}$$

$$x = \begin{array}{|c|} \hline \text{dark blue} \\ \hline \text{dark red} \\ \hline \end{array}$$

Partition  $\mathcal{P}_1$  maximizes entropy

$$\left\{ \begin{array}{|c|} \hline \text{light blue} \\ \hline \end{array} \times \begin{array}{|c|} \hline \text{light red} \\ \hline \text{dark red} \\ \hline \end{array}, \begin{array}{|c|} \hline \text{dark blue} \\ \hline \end{array} \times \begin{array}{|c|} \hline \text{light red} \\ \hline \text{dark red} \\ \hline \end{array} \right\}$$

MEC



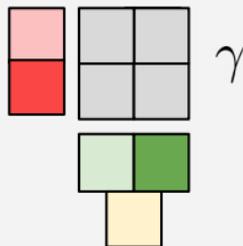
Sample  $Y_1$

$$\begin{array}{|c|} \hline \text{light yellow} \\ \hline \end{array} Y_1 \sim \begin{array}{|c|c|} \hline \text{gray} & \text{gray} \\ \hline \text{gray} & \text{gray} \\ \hline \end{array} \begin{array}{|c|} \hline \text{dark blue} \\ \hline \end{array}$$

Partition  $\mathcal{P}_2$  maximizes entropy

$$\left\{ \begin{array}{|c|} \hline \text{light blue} \\ \hline \text{dark blue} \\ \hline \end{array} \times \begin{array}{|c|} \hline \text{light red} \\ \hline \end{array}, \begin{array}{|c|} \hline \text{light blue} \\ \hline \text{dark blue} \\ \hline \end{array} \times \begin{array}{|c|} \hline \text{dark red} \\ \hline \end{array} \right\}$$

MEC



Sample  $Y_2$

$$\begin{array}{|c|} \hline \text{light green} \\ \hline \end{array} Y_2 \sim \begin{array}{|c|c|} \hline \text{gray} & \text{gray} \\ \hline \text{gray} & \text{gray} \\ \hline \end{array} \begin{array}{|c|} \hline \text{dark red} \\ \hline \end{array}$$