

$$\begin{array}{l} ? \\ ? \\ ? \\ ? \\ ? \\ ? \\ ? \\ ? \\ ? \\ ? \\ \psi \\ \phi \\ x \in \\ R^d \\ d \in \\ R^{\bar{a}} \\ a \\ S \\ \mathcal{U} \\ \mathcal{Y} \\ \mathcal{Y} = \\ \mathcal{U} \cup \\ S \\ n_s \\ n_y \\ c_y \in \\ \mathcal{U} \cup \\ S \\ y \\ \{(x^i,y^i)\}_{i=1}^{N_s} \end{array}$$

$$\begin{array}{l} N_s \\ X_s \in \\ R^{N_s \times d} \\ Y \\ C_s \in \\ R^{s \times a} \\ X^u \\ C^u \\ (X)_i \end{array}$$

$$\begin{array}{l} X \\ x_i \\ x \\ \langle \cdot, \cdot \rangle \end{array}$$

$$\begin{array}{l} \psi \\ ? \\ ?? \\ \dot{u} \in \\ \mathcal{U} \\ P(z_u|x) = \sum_{c \in \{0,1\}^a} P(u|c)p(c|x) \end{array}$$

$$\begin{array}{l} (1) \\ P(c|x) = \\ \prod_{n=1}^a P(c_n|x) \\ P(z_u|a) \\ P(u|c) = \frac{P(u)P(c|u)}{P(a^u)} = \frac{P(u)1(c=c^u)}{P(c^u)} \end{array}$$

$$P(u|x) = \frac{P(u)}{P(c^u)} \prod_{n=1}^a P(a_n^u|x)$$

$$\begin{array}{l} (2) \\ \frac{x}{P(c_i|x)} \\ \frac{P(c_i|x)}{P(y_k|x)} \\ P(c_i|x) = \sum_{k=1}^{n_u} P(y_k|x)I(c_i=c_i^{y_k}) \end{array}$$

$$\begin{array}{l} (3) \\ \hat{y} =_{u \in \mathcal{U}} P(u|x) =_{u \in \mathcal{U}} \prod_{i=1}^a \frac{P(c_i^u|x)}{P(c_i^u)} \end{array}$$

$$\begin{array}{l} (4) \\ ? \\ ? \\ ? \\ \dot{W} \\ x^TW \\ \dot{x} \\ Wc \\ c \end{array}$$

$$F(x,c) = \phi(x)^TW\theta(y)$$

$$\begin{array}{l} (5) \\ ? \\ ? \\ ? \\ s,Y_s;W,\theta) = \\ \frac{1}{N_s} \sum_{n=1}^{N_s} \lambda_{r_{\Delta}(x_n,y_n)} \sum_{y \in \mathcal{Y}} \max(0,l(x_n,y_n,y)) \\ l(x_n,y_n,y) = \\ 1(y \neq \\ y_n) + \\ \phi(x_n)^TW\theta(y) - \\ \phi(x_n)^TW\theta(y_n) \end{array}$$