Learning from User Behavior Initialization Rounds r = 1, 2, 3, ...User Interactions Supervised Dataset \mathcal{D}_r Dataset \mathcal{D}_0 Construction Natural Language Supervised Datasets Generation Model Training $\bar{x} \sim P(\cdot \mid \cdot, \cdot; \theta_r)$ $\mathcal{D}_0,\ldots,\mathcal{D}_r$ GPT-2 Contextual Bandit Training Weights