

Discrete Bias
Sequence B^t

Discrete
Response
Sequence Y^t

Gradient-based Discrete Sampling

$P(B|Y)$

B^{t+1}

B^{t+1}

Compute distribution to
sample bias sequence

$$\text{softmax}((\nabla f(B))_{i,j}(1 - \hat{b}_{i,j}))_{j \in |V|}$$

map bias tokens
to bias vectors

$$\tilde{b}_{i,j} = -||Mb_i - Mv_j||_2^2$$

P^{LM}

Auto-Regressive Biasing

Y^{t+1}