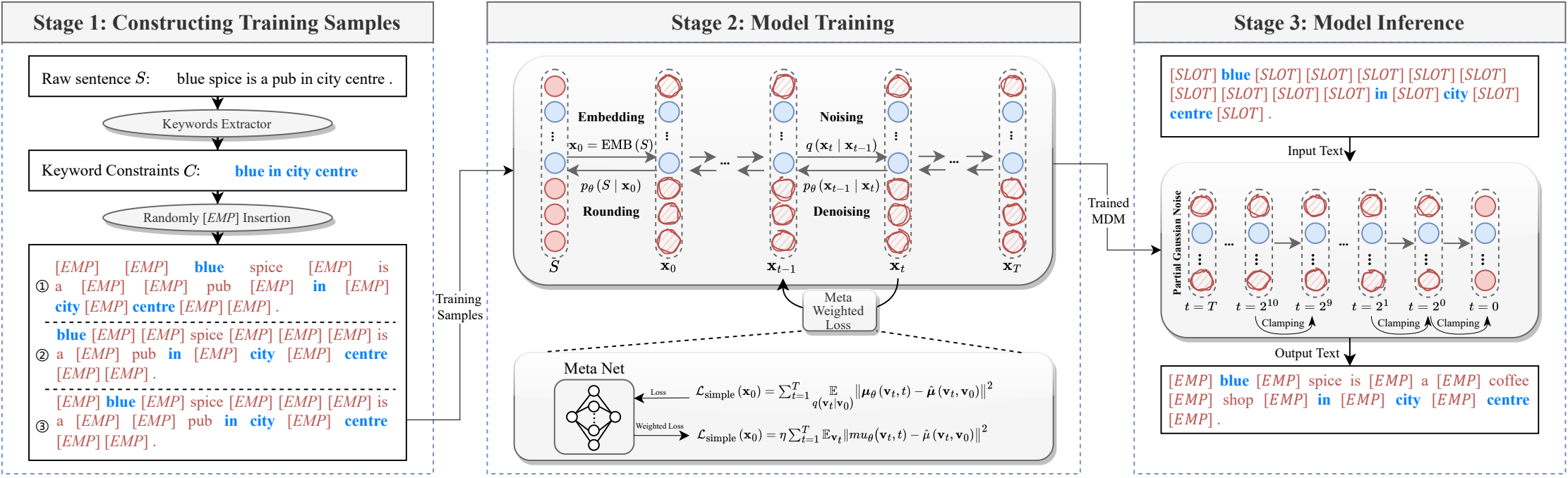
Stage 1: Constructing Training Samples
Raw sentence S: blue spice is a pub in city centre .
Keywords Extractor
Keyword Constraints C: blue in city centre
Randomly [EMP] Insertion
① [EMP] [EMP] blue spice [EMP] is a [EMP] [EMP] pub [EMP] in [EMP] city [EMP] centre [EMP] [EMP] .
② blue [EMP] [EMP] spice [EMP] [EMP] [EMP] is a [EMP] pub in [EMP] city [EMP] centre [EMP] [EMP] .
③ [EMP] blue [EMP] spice [EMP] [EMP] [EMP] is a [EMP] [EMP] pub in city [EMP] centre [EMP] [EMP] .
Training Samples
Stage 2: Model Training
Embedding
$\mathbf{x}_0 = \mathrm{EMB}(S)$
$p_\theta(S \mid \mathbf{x}_0)$
Rounding
Noising
$q(\mathbf{x}_t \mid \mathbf{x}_{t-1})$
$p_\theta(\mathbf{x}_{t-1} \mid \mathbf{x}_t)$
Denoising
S
$\mathbf{x}_0$
$\mathbf{x}_{t-1}$
$\mathbf{x}_t$
$\mathbf{x}_T$
Meta Weighted Loss
Meta Net
Loss
$\mathcal{L}_{\text{simple}}(\mathbf{x}_0) = \sum_{t=1}^{T} \mathbb{E}_{q(\mathbf{v}_t|\mathbf{v}_0)} \|\boldsymbol{\mu}_\theta(\mathbf{v}_t, t) - \hat{\boldsymbol{\mu}}(\mathbf{v}_t, \mathbf{v}_0)\|^2$
Weighted Loss
$\mathcal{L}_{\text{simple}}(\mathbf{x}_0) = \eta \sum_{t=1}^{T} \mathbb{E}_{\mathbf{v}_t} \|mu_\theta(\mathbf{v}_t, t) - \hat{\mu}(\mathbf{v}_t, \mathbf{v}_0)\|^2$
Trained MDM
Stage 3: Model Inference
[SLOT] blue [SLOT] [SLOT] [SLOT] [SLOT] [SLOT] [SLOT] [SLOT] [SLOT] [SLOT] in [SLOT] city [SLOT] centre [SLOT] .
Input Text
Partial Gaussian Noise
$t = T$
$t = 2^{10}$
$t = 2^9$
$t = 2^1$
$t = 2^0$
$t = 0$
Clamping
Clamping
Clamping
Output Text
[EMP] blue [EMP] spice is [EMP] a [EMP] coffee [EMP] shop [EMP] in [EMP] city [EMP] centre [EMP] .