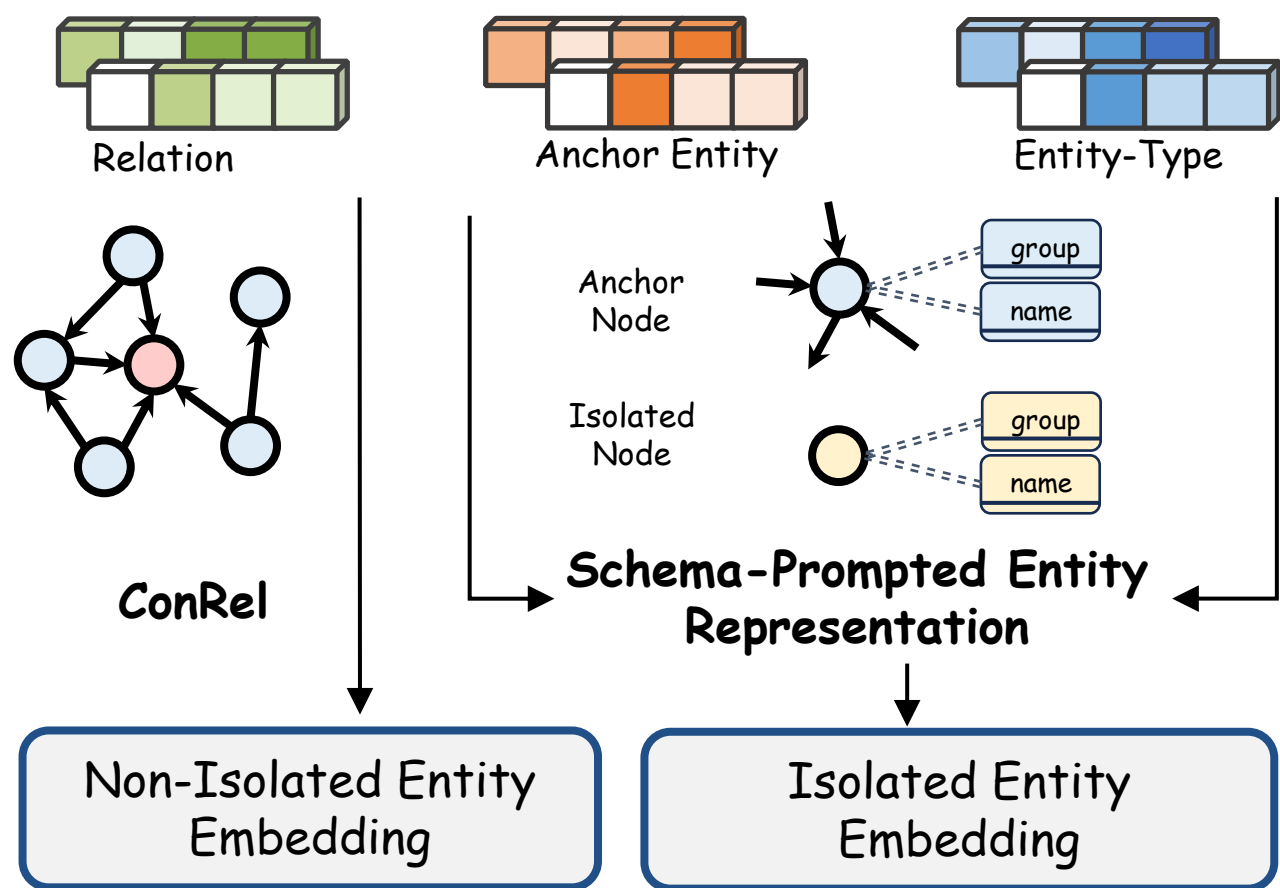
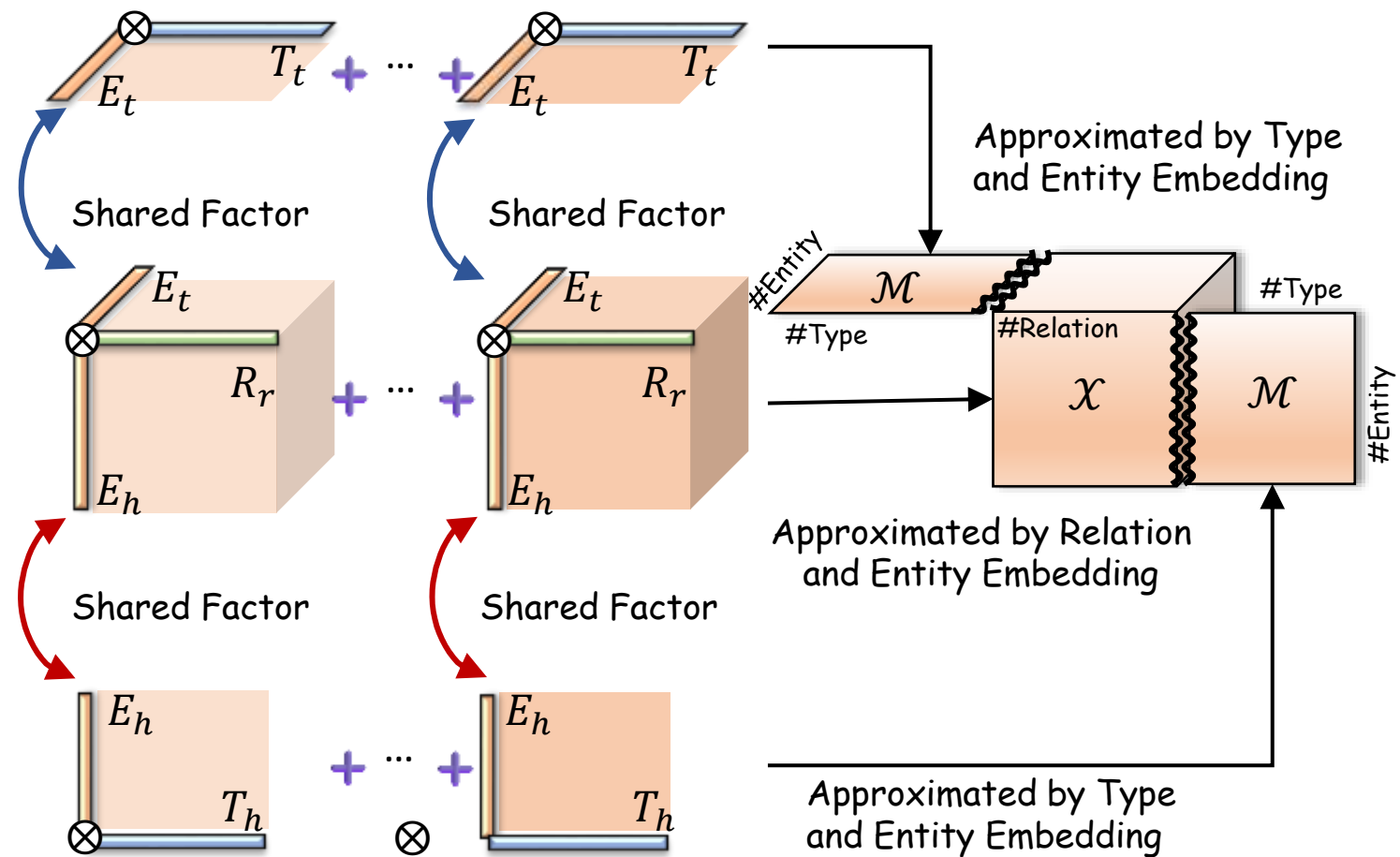


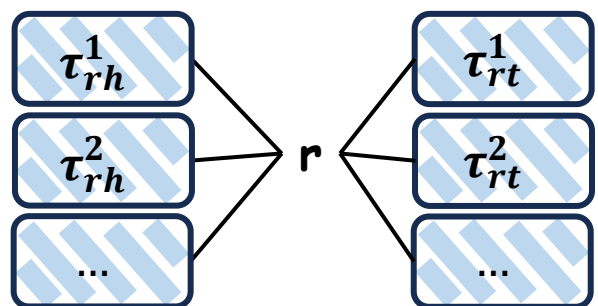
## Learnable Schema-Aware Entity Embedding



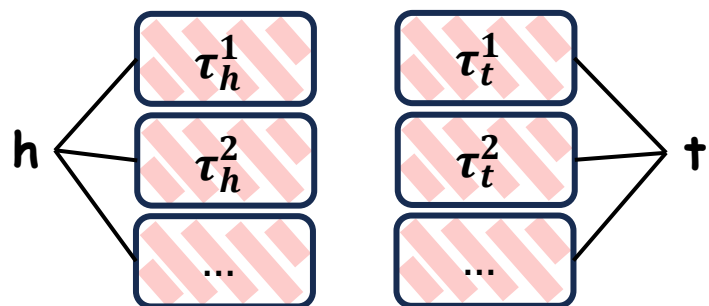
## Coupled Matrix Tensor Factorization Module



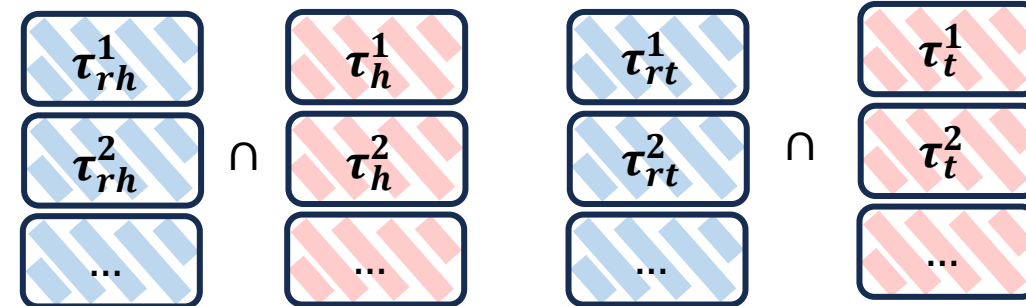
### Mismatched Relation-Type Sampling



### Mismatched Entity-Type Sampling



### Exclusionary Dual-Type Sampling



## Negative Sample Strategies

### Type Loss

$$\mathcal{L}(e, \tau)$$

### Triple Loss

$$\mathcal{L}(h, r, t)$$