Text input
Graph input
Multiple instance learning (MIL) is a variation of supervised learning where a single class label is assigned to a bag of instances. In this paper, we state the MIL problem as learning the Bernoulli distribution of the bag label where the bag label probability is fully parameterized by neural networks. Furthermore, we propose a neural network-based permutation-invariant aggregation operator that corresponds to the attention mechanism. Notably, an application of the proposed attention-based operator provides insight into the contribution of each instance to the bag label. We show empirically that our approach achieves comparable performance to the best MIL methods on benchmark MIL datasets and it outperforms other methods on a MNIST-based MIL dataset and two real-life histopathology datasets without sacrificing interpretability.
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Representation Learning
Knowledge Graph Representation
Graph embedding
Knowledge fusion
Knowledge fusion layer
Token input
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learning
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Token input
Graph node embedding
T-Encoder
M x
Multi-head Attention
Feed Forword Network
G-Encoder
N x
Multi-head Attention
Text&Graph Fusion
Token output
Graph output