

Enhancing Knowledge Graph Convolutional Networks with Structural Adaptive Receptive Fields for Improved Node Representation and Information Aggregation

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Abstract : Recently, the Knowledge Graph Framework Network (KGCN) has developed powerful capabilities in knowledge representation and reasoning tasks. However, traditional KGCN often uses a fixed weight mechanism when aggregating information, failing to make full use of rich structural information, resulting in a certain expression ability of node representation and easily causing over-smoothing problems. In order to solve these challenges, the paper proposes a distinct graph neural network model called KGCN-STAR (Knowledge Graph Convolutional Network with Structural Adaptive Receptive Fields). This model dynamically adjusts the perception of each node by introducing a structural adaptive receptive field. Wild range and a subgraph aggregator is designed to capture local structural information more effectively. Experimental results show that KGCN-STAR shows significant performance improvement on multiple knowledge graph data sets, especially showing considerable capabilities in the task of representation learning of complex structures.

Keywords : knowledge graph(KG), graph neural networks (GNN), structural adaptive receptive fields, information aggregation

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