

Multi-Stream Graph Attention Network for Recommendation with Knowledge Graph

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Abstract : In recent years, Graph neural network has been widely used in knowledge graph recommendation. The existing recommendation methods based on graph neural network extract information from knowledge graph through entity and relation, which may not be efficient in the way of information extraction. In order to better propose useful entity information for the current recommendation task in the knowledge graph, we propose an end-to-end Neural network Model based on multi-stream graph attentional Mechanism (MSGAT), which can effectively integrate the knowledge graph into the recommendation system by evaluating the importance of entities from both users and items. Specifically, we use the attention mechanism from the user's perspective to distil the domain nodes information of the predicted item in the knowledge graph, to enhance the user's information on items, and generate the feature representation of the predicted item. Due to user history, click items can reflect the user's interest distribution, we propose a multi-stream attention mechanism, based on the user's preference for entities and relationships, and the similarity between items to be predicted and entities, aggregate user history click item's neighborhood entity information in the knowledge graph and generate the user's feature representation. We evaluate our model on three real recommendation datasets: Movielens-1M (ML-1M), LFM-1B 2015 (LFM-1B), and Amazon-Book (AZ-book). Experimental results show that compared with the most advanced models, our proposed model can better capture the entity information in the knowledge graph, which proves the validity and accuracy of the model.

Keywords : graph attention network, knowledge graph, recommendation, information propagation

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