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Week 2 Summary

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In the article “Rethinking the Item Order in Session-based Recommendation with Graph Neural Networks”, the author introduces the challenging problem of predicting the user’s preference in a short anonymous interaction session in the session-based recommendation. While the session-based RS can show user’s preference by taking the recent session of user-item interactions which can be naturally represented as a time series sequence, it still has some challenging limitations as follow:

1. The user’s preference doesn’t completely depend on the chronology of the sequence.
2. The recent approach which divides the user’s preference into the long-term and the short-term preference is too simple to capture the complex item transition pattern.

To determine the intrinsic order of items within a session, the author proposes the model named Full Graph Neural Network (FGNN). The goal of this approach is to learn the inherent order of the item transition pattern and compute a session-level representation to generate a recommendation. The methodology of FGNN is listed as follows:

1. Converting the session sequence into the session graph for the purpose to process every session via GNN.
2. Using the weighted graph attentional layer (WGAT) to compute the information flow between items within the session.
3. Deploying the Readout function to generate the representation of the whole graph based on the node features. It will learn the order of the item transition pattern, thus avoiding the bias of the time order and the inaccuracy of the self-attention on the last input item.
4. Making the recommendation by computing a score vector for every item over the whole item set.

For the experiments and analysis, the author proposes the FGNN on two real-world representative datasets which are Yoochoose and Diginetica, and set nine baselines to evaluate its performance with P@20 and MRR@20 evaluation metrics. Compared to all the baselines methods, FGNN has the best performance on all the datasets.