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Week 2 Summary

UW ID: 2150115

In the article “Session-Based Recommendation with Graph Neural Networks”, the author introduces the session-based recommendation systems with Graph Neutral Networks (SR-GNN). He briefly discusses the techniques on existing recommendations systems, which are categorized into conventional recommendations methods, sequential methods, deep learning-based methods, and neural networks on graphs. In each category, he points out the limitations of these methods – difficulty in estimating user representation without adequate user behavior and bad performance of supporting complex transition because these methods only model the single-way transitions between consecutive items and neglect the transitions among the contexts. To conquer these limitations, the author purposes the SR-GNN as a solution. The SR-GNN has four steps – constructing session graphs, learning the item embeddings on each graph, generating session embeddings, making recommendations, and training the model. More precisely, the workflow should be same as follow:

1. Construct the directed graph for each session sequence.
2. Calculate the latent vectors for all nodes in each graph.
3. Combine long-term preference and current interests of the session.
4. Predict the probability of each item will be clicked next for each session.

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