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Week 2 Summary

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In the article “Graph Neural Networks in Recommender Systems: A Survey”, the author introduces the implementation of Graph Neutral Networks (GNN) in Recommender Systems. He provides the background information on Recommender Systems and the early approaches people attempted at the beginning; thus, demonstrating that GNN is a dominant methodology for Recommender Systems. After that, he points out the fact that only a few comprehensive reviews that analyze the current progress of implementing recommender systems and claims that he will systematically introduce the advances of GNN-based recommendation and discusses its challenges or future work. He briefly introduces the recommender systems and GNN techniques – three different types of graphs (directed/undirected graph, homogenous/heterogeneous graph, hypergraph) and five unique GNN frameworks (GCN, GraphSAGE, GAT, GGNN, HGNN). Furthermore, he categorizes the GNN-based recommendation which are user-item collaborative filtering, sequential recommendation, social recommendation, knowledge graph-based recommendation, and other tasks; then, he discusses each type with its methodology, pros, and cons. In addition, the author introduces the commonly used datasets, evaluation metrics for different recommendation tasks, and applications of GNN based recommendations in the real world. In the end, he discusses the future research directions in nine different fields.