

Application of Graph Neural Networks to Mitigate Popularity Bias in Content Recommendations

Literature Review

BiGNN: A Bilateral-Branch Graph Neural Network to Solve Popularity Bias in Recommendation by Kou et al. introduces a two-branch GNN framework that effectively distinguishes between popular and long-tail items, improving recommendation fairness, especially in datasets with imbalanced popularity distributions.

MixGCF: An Improved Training Method for Graph Neural Network-based Recommender Systems by Huang et al. focuses on enhancing the GNN training process by incorporating user-item interaction information, offering an effective solution for reducing popularity bias but at the cost of increased computational complexity.

XSimGCL: Towards Extremely Simple Graph Contrastive Learning for Recommendation by Yu et al. simplifies graph contrastive learning methods, making them more computationally efficient, although it may struggle with capturing complex user-item relationships in large-scale datasets.

SimGCL: Graph Contrastive Learning by Finding Homophily in Heterophily by Liu et al. presents a method for handling both homophilic and heterophilic relationships in graphs, making it suitable for datasets with diverse types of user-item interactions.

An Explicitly Weighted GCN Aggregator based on Temporal and Popularity Features for Recommendation by Li et al. proposes an explicit weighting mechanism in GCNs to account for both temporal and popularity-based features, which helps reduce bias in dynamic recommendation environments.

Addressing Popularity Bias in Recommender Systems: An Exploration of Self-Supervised Learning Models by Klimashevskaya et al. explores self-supervised learning approaches for mitigating popularity bias, offering a promising direction for improving exploration in recommendations without explicit supervision.

A Survey on Popularity Bias in Recommender Systems by Klimashevskaya et al. provides an extensive survey of methods addressing popularity bias, summarizing existing solutions and highlighting challenges for future research in this area.

Graph Neural Networks in Recommender Systems: A Survey by Wu et al. offers a comprehensive survey of GNN applications in recommender systems, providing valuable insights into the theoretical foundations and practical applications of GNNs for addressing bias in recommendations.