Bridging Graph Learning and Federated Optimization for Recommendations

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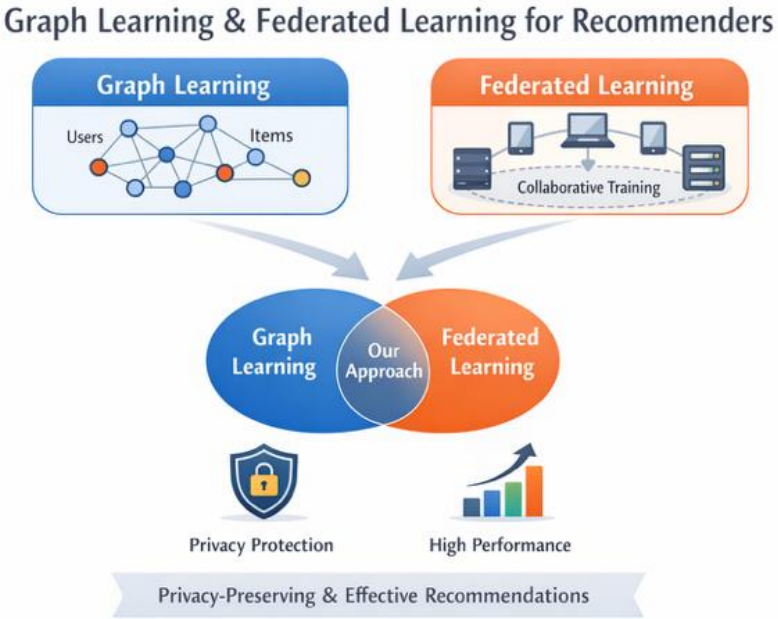
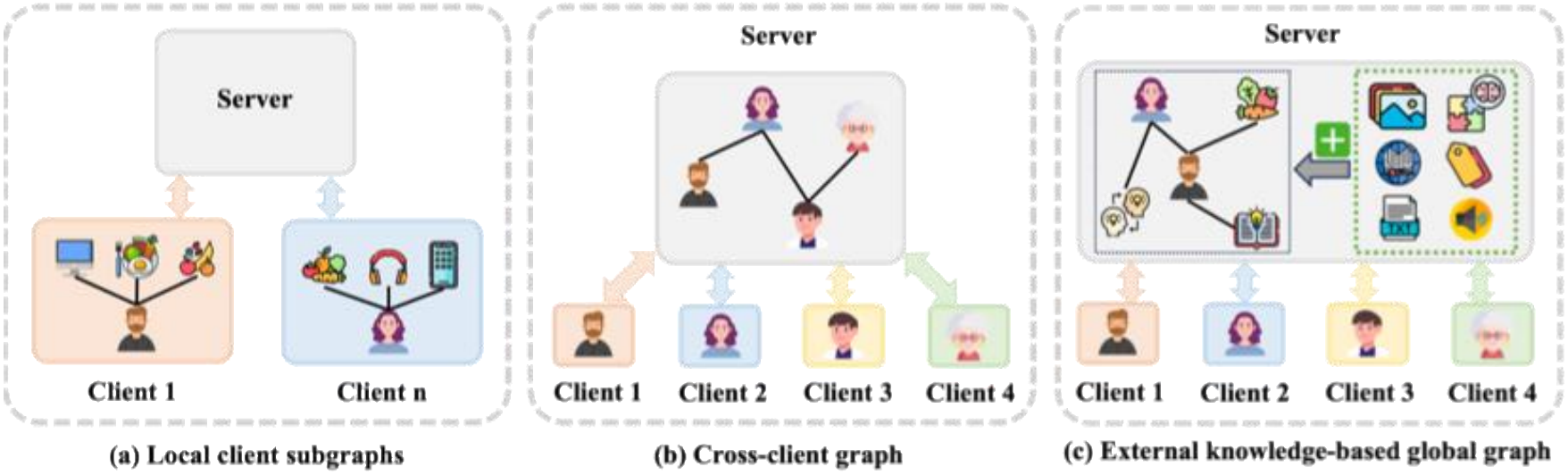
Background & Solutions

- Background:
  - Graph learning models high-order relationships between users and items, improving recommendation accuracy.
  - In real-world scenarios, user data is decentralized and privacy-sensitive, making centralized graph training impractical.
- Solutions: Federated learning enables collaborative model training without sharing raw data. This work explores combining graph learning and federated learning to build privacy-preserving, high-performance recommenders.



Research Landscape & Future Directions

- Research landscape: Federated graph recommendation studies fall into three categories, including client-only subgraphs, cross-client graphs, and global graphs enriched with external knowledge.



- Future directions:
  - Graph Foundation Models for Federated Recommendation
  - Cross-Modal Federated Graph Recommendation
  - Graph Generation and Simulation for Federated Recommendation
  - Resource and Privacy Considerations for Practical Deployment