YIFEI SUN

Hangzhou, Zhejiang, China

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EDUCATION

Ph.D. student in Computer Science, Zhejiang University   Sept 2021 - Present
Supervisor: Prof. Yang Yang

Master student in Electronic Information, Zhejiang University   Sept 2019 - Sept 2021
Supervisor: Prof. Guanghua Song and Prof. Bowei Yang

Bachelor of Engineering in Computer Science and Technology, Dalian University of Technology
Supervisor: Prof. Nan Ding   Sept 2014 - Jun 2019

Bachelor of Arts in Japanese, Dalian University of Technology   Sept 2014 - Jun 2019

RESEARCH INTERESTS

My research interests lie primarily in the area of *Machine Learning and Data Mining on Graphs*, including but not limited to graph neural networks, graph pre-training, and real-world applications on graphs.

SELECTED PUBLICATIONS

Conference Papers:

Yifei Sun, Haoran Deng, Yang Yang, Chunping Wang, Jiarong Xu, Renhong Huang, Linfeng Cao, Yang Wang, and Lei Chen. Beyond Homophily: Structure-aware Path Aggregation Graph Neural Network. In Proceedings of the 31st International Joint Conference on Artificial Intelligence (IJCAI'22), 2022.

Ziwei Chai, Yang Yang, Jiawang Dan, Sheng Tian, Changhua Meng, Weiqiang Wang, and **Yifei Sun**. Towards Learning to Discover Money Laundering Sub-network in Massive Transaction Network. In Proceedings of the 35th AAAI Conference on Artificial Intelligence (AAAI'23), 2023.

Journal Paper:

Xuan Yang, Yang Yang, Jintao Su, **Yifei Sun**, Shen Fan, Zhongyao Wang, Jun Zhan, and Jingmin Chen. Who's Next: Rising Star Prediction via Diffusion of User Interest in Social Networks. In IEEE Transaction on Knowledge and Data Engineering (TKDE), 2022.

RESEARCH EXPERIENCE

Foundation Model for Generalized Graph Pre-training.   Mar 2023 - Present
Institute for Artificial Intelligence, Zhejiang University   *Hangzhou, China*

- Identify the transferable token for graph pre-training as semantic graph patch which consist of node semantic tokens and corresponding graph structure.
- Propose a foundation model composed of intra-patch and inter-patch aggregation for generalized graph pre-training.

Narrow the Gap Between Graph Pre-training and Fine-tuning.   Jul 2022 - Feb 2023
Institute for Artificial Intelligence, Zhejiang University   *Hangzhou, China*

- Proposed to preserve the generative patterns of downstream graphs to narrow the gap between pre-training and fine-tuning.
- Designed a general self-supervised fine-tuning strategy by the graphon reconstruction based on theoretical analysis, and empirically proved its effectiveness on fourteen datasets of two settings.

Backflow Prediction in Mobile Games.   Mar 2022 - Jun 2022
Institute for Artificial Intelligence, Zhejiang University   *Hangzhou, China*

- Proposed to study a novel and valuable problem: backflow prediction which is to predict the return probability of churn users rather than the churn probability.
- Conducted a study of community influence on churn users of a large-scale FPS mobile game dataset from a team-level perspective.
- Designed CoInfNet to jointly model the explicit invitation influence and implicit diffusion process.

Break the Homophily Limitation of GNNs.   Jul 2021 - Jan 2022
Institute for Artificial Intelligence, Zhejiang University   *Hangzhou, China*

- Proposed a novel path aggregation paradigm to capture the structure context information in both homophily and heterophily graphs.
- Designd an end-to-end model PathNet which leverages order and distance information of path to encode complex semantic information in graphs.
- PathNet achieved superior accuracy by up to 10.08% on node classification benchmarks.

Alleviate Recommendation System Disequilibrium.   Jan 2021 - May 2021
Institute for Artificial Intelligence, Zhejiang University   *Hangzhou, China*

- Proposed to address the unfair recommendation problem in online marketing by analyzing the rising star problem.
- Designed a RiseNet with a novel GNN module to quantify the user interest in dynamic user-sharing networks and a coupled mechanism to capture the interaction between the user graph data and the item time-series data.
- RiseNet achieved up to 7.24% improvement in F1 score on the real-world Taocode.

SELECTED ACTIVITIES

Assistance in Managing AINet Group.   Jul 2021 - Present

- Organized weekly paper sharing and course study sessions with a total accumulation of 100+ papers and 2 courses.
- Responsible for server security and resource allocation as an administrator.

Mentorship in InterNet Association (INA) of Zhejiang University.   Nov 2020 - Present

- Mentored two junior students of machine learning group to conduct their interested projects on topics like graph mining and time series modeling.

SELECTED HONORS

- Outstanding Graduate Student of the Year, Zhejiang University.   2020 - 2021, 2021 - 2022
- Merit Graduate Student of the Year, Zhejiang University.   2020 - 2021
- Second-class Academic Scholarship, Dalian University of Technology.   2017 - 2018

SKILLS

- **Programming:** Python (PyTorch, PyG, DGL), C++, C, MySQL.
- **Natural Languages:** Mandarin Chinese (Native), English (Proficient), Japanese (N1)