

# YIFEI SUN

Hangzhou, Zhejiang, China

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## EDUCATION

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**Ph.D. student in Computer Science**, Zhejiang University Sept 2019 - Present  
Supervisor: Prof. Yang Yang

**Bachelor of Computer Science and Technology**, Dalian University of Technology Sept 2014 - Jun 2019

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

## RESEARCH INTERESTS

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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

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### 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

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**Foundation Model for Graph Generalized 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 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.
- Prepared to submit to NeurIPS 2023.

**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.
- Designed 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**

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### **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**

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- 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**

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