Jiawei Liu

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https://scholar.google.com/citations?user=ufius3MAAAAJ

Research Interests

Graph Machine Learning (16 papers), AI for EDA (8 papers, AIG*3, PDN*3, SAT*2)

Education

Beijing University of Posts and Telecommunications 2020.09 - 2025.06

Computer Science and Technology, PhD Beijing

Beijing University of Posts and Telecommunications 2016.08 - 2020.05

Computer Science and Technology (Experimental Class), Bachelor Beijing

Internship Experience

Electronic Design Automation Center, The Chinese University of Hong Kong 2024.09 - 2025.03

Research Assistant Hongkong

Leader: Bei Yu

Main work: Lead the research on GNN-based sequential circuit representation learning.
Outcome:

- Submitted a first-authored paper to IJCAI 2025.

Large Circuit Model Group, National Center of Technology Innovation for EDA 2024.07 - 2024.09

Research Intern Nanjing

Leader: Qiang Xu

Main work: Lead the research on GNN-based combinational circuit representation learning.

Outcome:

- Achieved a 43.01% improvement in Recall for subcircuit output boundary prediction, with a reduction of 94.74% in training time.
- Published a first-authored paper on DATE 2025.

Honors & Awards

National first prize of Integrated Circuit EDA Elite Challenge (Role: Team Leader) 2023.12

Beijing Outstanding Graduate 2020.06

National second prize of China Undergraduate Mathematical Contest in Modeling (Role: Team Leader) 2018.10

Main Publications

Graph Foundation Models: Concepts, Opportunities and Challenges

Jiawei Liu*, Cheng Yang*, Zhiyuan Lu, Junze Chen, Yibo Li, Mengmei Zhang, Ting Bai, Yuan Fang, Lichao Sun, Philip S. Yu, Chuan Shi. (IEEE TPAMI, CCF-A, SCI Q1 TOP, IF=22.2)

WideGate: Beyond Directed Acyclic Graph Learning in Subcircuit Boundary Prediction

Jiawei Liu, Zhiyan Liu, Xun He, Jianwang Zhai, Zhengyuan Shi, Qiang Xu, Bei Yu, Chuan Shi. (DATE 2025, CCF-B)

PolarGate: Breaking the Functionality Representation Bottleneck of And-Inverter Graph Neural Network

Jiawei Liu, Jianwang Zhai, Mingyu Zhao, Zhe Lin, Bei Yu, Chuan Shi. (ICCAD 2024, CCF-B)

Heterogeneous Spatio-temporal Graph Contrastive Learning for Point-of-Interest Recommendation

Jiawei Liu, Haihan Gao, Cheng Yang, Chuan Shi, Tianchi Yang, Hongtao Cheng, Qianlong Xie, Xingxing Wang, Dong Wang. (Tsinghua Science and Technology, SCI Q1, IF=3.7)

Graph Neural Network based Time Estimator for SAT Solver

Jiawei Liu, Wenyi Xiao, Hongtao Cheng, Chuan Shi. (International Journal of Machine Learning and Cybernetics, SCI Q3, IF=3.6)

Other Publications

A survey on heterogeneous information network based recommender systems: Concepts, methods, applications and resources.

Jiawei Liu, Chuan Shi, Cheng Yang, Zhiyuan Lu, Philip S.Yu. (AI Open)

IRGNN: A Graph-based Framework Integrating Numerical Solution and Point Cloud for Static IR Drop Prediction.

Feng Guo, Yueyue Xi, Jianwang Zhai, Jingyu Jia, **Jiawei Liu**, Kang Zhao, Chuan Shi. (DAC 2025, CCF-A)

IR-Fusion: A Fusion Framework for Static IR Drop Analysis Combining Mathematical Solutions and Machine Learning

Feng Guo, Jianwang Zhai, Jingyu Jia, **Jiawei Liu**, Kang Zhao, Bei Yu, Chuan Shi. (DATE 2025, CCF-B)

Graph Foundation Model

Chuan Shi, Junze Chen, **Jiawei Liu**, Cheng Yang. (Frontiers of Computer Science, SCI Q3, IF=3.1)

PGAU: Static IR Drop Analysis for Power Grid using Attention U-Net Architecture and Label Distribution Smoothing

Feng Guo*, **Jiawei Liu***, Jianwang Zhai, Jingyu Jia, Kang Zhao, Chuan Shi. (GLSVLSI 2024)

SATGL: an Open-source Graph Learning Toolkit for Boolean Satisfiability

Hongtao Cheng*, **Jiawei Liu***, Jianwang Zhai, Mingyu Zhao, Cheng Yang, Chuan Shi. (ISEDA 2024)

Endowing Pre-trained Graph Models with Provable Fairness

Zhongjian Zhang, Mengmei Zhang, Yue Yu, Cheng Yang, **Jiawei Liu**, Chuan Shi. (WWW 2024, CCF-A)

Abnormal Event Detection via Hypergraph Contrastive Learning

Bo Yan, Cheng Yang, Chuan Shi, **Jiawei Liu**, Xiaochen Wang. (SDM 2023, CCF-B)

Learning to Distill Graph Neural Networks

Cheng Yang, Yuxin Guo, Yao Xu, Chuan Shi, **Jiawei Liu**, Chunchen Wang, Xin Li, Ning Guo, Hongzhi Yin. (WSDM 2023, CCF-B)

Extract the Knowledge of Graph Neural Networks and Go Beyond it: An Effective Knowledge Distillation Framework

Cheng Yang, **Jiawei Liu**, Chuan Shi. (WWW2021, CCF-A)

Decorrelated Clustering with Data Selection Bias

Xiao Wang, Shaohua Fan, Kun Kuang, Chuan Shi, **Jiawei Liu**, Bai Wang. (IJCAI 2020, CCF-A)