Shichang Zhang

Contact Information

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Research Interests

Graph Data Mining, Explainable AI, Large Language Models, Model Efficiency, Cooperative Game Theory, and Self-Supervised Learning

Education

University of California, Los Angeles — Los Angeles, CA
Ph.D. in Computer Science (Advisor: Yizhou Sun) — Expected: 2024

Stanford University — Stanford, CA
M.S. in Statistics — Apr. 2019

University of California, Berkeley — Berkeley, CA
B.A. in Statistics — May 2017
Honors: Honors in Statistics, High Distinction

Honors and Awards

KDD Excellence in Reviewing (30 in 1551)	2023
Amazon Fellowship	2023
J.P.Morgan Chase AI PhD Fellowship	2023
Snap Research Fellowship Honorable Mention	2022
ICML Top Reviewer (Top 10%)	2022
UCLA Graduate Division Fellowship	2021

Publications

Conference Papers:

Yewen Wang, **Shichang Zhang**, Junghoo Cho, Yizhou Sun. "Laplacian Score Benefit Adaptive Filter Selection for Graph Neural Networks" (SDM 2024)

Zhichun Guo, William Shiao, **Shichang Zhang**, Yozen Liu, Nitesh Chawla, Neil Shah, Tong Zhao. "Linkless Link Prediction via Relational Distillation" (**ICML 2023**)

Shichang Zhang, Jiani Zhang, Xiang Song, Soji Adeshina, Da Zheng, Christos Faloutsos, Yizhou Sun. "PaGE-Link: Graph Neural Network Explanation for Heterogeneous Link Prediction" (**WWW 2023**)

Shichang Zhang, Yozen Liu, Neil Shah, Yizhou Sun. "Explaining Graph Neural Networks with Structure-Aware Cooperative Games" (**NeurIPS 2022**)

Shichang Zhang, Yozen Liu, Yizhou Sun, Neil Shah. " Graph-less Neural Networks, Teach Old MLPs New Tricks via Distillation" (**ICLR 2022**)

Wei Jin, Lingxiao Zhao, **Shichang Zhang**, Yozen Liu, Jiliang Tang, Neil Shah. " Graph Condensation for Graph Neural Networks" (**ICLR 2022**)

Workshop Papers and Pre-prints:

Qianli Wu*, **Shichang Zhang***, Botao Xia, Zimin Zhang, Fang Sun, Ziniu Hu, Yizhou Sun. "Explainable Molecular Concept Learning with Large Language Models"(XAI4Sci@AAAI 2024, *equal contribution)

Haoyu Li*, **Shichang Zhang***, Longwen Tang, Yizhou Sun. "Predicting and Interpreting Energy Barriers of Metallic Glasses with Graph Neural Networks" (AI4Mat@NeurIPS2023, *equal contribution)

Tianjian Guo, **Shichang Zhang**, Indranil Bardhan, Ying Ding. "Predicting ICU Length of Stay: A Graph Learning-based Explainable AI Approach" (**WITS 2023**)

Xiaoxuan Wang, Ziniu Hu, Pan Lu, Yanqiao Zhu, Jieyu Zhang, Satyen Subramaniam, Arjun R Loomba, **Shichang Zhang**, Yizhou Sun, Wei Wang. "SciBench Evaluating College-Level Scientific Problem-Solving Abilities of Large Language Models" (MathAI@NeurIPS2023)

Shichang Zhang, Atefeh Sohrabizadeh, Cheng Wan, Zijie Huang, Ziniu Hu, Yewen Wang, Yingyan (Celine) Lin, Jason Cong, Yizhou Sun. "A Survey on Graph Neural Network Acceleration: Algorithms, Systems, and Customized Hardware" (pre-print)

Shichang Zhang*, Ziniu Hu*, Arjun Subramonian, Yizhou Sun. "Motif-driven Contrastive Learning of Graph Representations" (SSL@WWW2021, *equal contribution)

Invited Talks

Graph Neural Network Explanation for Heterogeneous Link Prediction
Amazon Trans.AI Research Talks — July 2023
International World Wide Web Conference — May 2023

Structure-Aware Graph Neural Network Explanation
AI Time NeurIPS Talk Series — Feb 2023

Graph-less Neural Networks
NVIDIA GNN Reading Group — May 2022

Teaching Experience

Teaching Assistant, University of California, Los Angeles
CS145: Introduction to Data Mining — Fall 2020, Fall 2021
CS32: Introduction to Computer Science II — Spring 2021

Academic Service

Conference Reviewer/Program Committee:

KDD - ACM SIGKDD Conference on Knowledge Discovery and Data Mining	2020, 2023
NeurIPS - Advances in Neural Information Processing Systems	2021 - 2023
ICML - International Conference on Machine Learning	2022 - 2023
CIKM - ACM Conference on Information and Knowledge Management	2022 - 2023
AAAI - AAAI Conference on Artificial Intelligence	2023 - 2024
ICDM - IEEE International Conference on Data Mining	2021
WSDM - ACM International Web Search and Data Mining Conference	2023 - 2024
LOG - Learning on Graphs Conference	2023
ICLR - International Conference on Learning Representations	2024
SDM - SIAM International Conference on Data Mining	2024

Journal Reviewer:

TPAMI - IEEE Transactions on Pattern Analysis and Machine Intelligence
TKDD - ACM Transactions on Knowledge Discovery from Data
TKDE - IEEE Transactions on Knowledge and Data Engineering
TNNLS - IEEE Transactions on Neural Networks and Learning Systems

Mentorship

Arjun Subramonian (UCLA undergrad → UCLA PhD)	Mar. 2020 - Mar. 2021
Haoyu Li (UCLA undergrad)	Mar. 2023 - Present
Qianli Wu (UCLA undergrad)	Mar. 2023 - Present
Botao Xia (UCLA undergrad)	Oct. 2023 - Present
Ziming Zhang (UCLA undergrad)	Oct. 2023 - Present

Professional Experience

Amazon Web Service (AWS) Santa Clara, CA
Applied Scientist Intern, Graph Machine Learning Team June 2023 - Nov. 2023

- Worked on applying large language models (LLMs) to text-rich graph data with hierarchical neighborhood compression, which allows LLMs to leverage the graph structure and long input text features to outperform traditional graph machine learning models on standard tasks like node classification and link prediction.

Amazon Web Service (AWS) Santa Clara, CA
Applied Scientist Intern, Graph Machine Learning Team June 2022 - Oct. 2022

- Proposed a new framework to explain GNN link prediction for recommendation on graph data, which improves user trust in the model and helps developers debug the model. Work published in WWW 2023.
- The implemented framework will be incorporated into the Amazon Neptune ML project in production.

Snap Research Los Angeles, CA
Research Intern, Computational Social Science Team June 2021 - Sept. 2021

- Proposed a cross-model distillation framework to transfer knowledge from GNNs to MLPs, which speeds up model inference by 179 times and facilitates model deployment on latency-constraint applications. Work published in ICLR 2022.
- Worked on condensing large-scale training graphs to small synthetic graphs by over 90% reduction rate while maintaining competitive model performance for GNNs trained from scratch, which significantly saves storage space and achieves efficient continue learning. Work published in ICLR 2022.

WeWork Inc. Palo Alto, CA
Data Scientist Intern, Research and Applied Science Team June 2019 - Sept. 2019

- Implemented a data processing pipeline in SQL and Python for data querying, data cleaning, and feature engineering.
- Trained a Gradient Boosted Tree model on two million customer data to predict occupancy rate for WeWork buildings and achieved 0.093 MAE on the test set.
- Presented the pricing model as a selected outstanding project to the Research and Applied Science team including the VP.

Skills

Programming: Python (PyTorch, PyG, DGL), C++, R, Java, Linux (Ubuntu), Git
Natural Language: Mandarin Chinese (Native), English (Proficient)