Shichang Zhang

Contact Information

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Work Experience

Harvard University — Cambridge, MA
Postdoctoral Fellow — Present

Education

University of California, Los Angeles — Los Angeles, CA
Ph.D. in Computer Science — June 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

Research Interests

Explainable AI, Large Language Models, Graph Data Mining, Data Attribution, Mechanistic Interpretability

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:

Fred Xu, Song Jiang, Zijie Huang, Xiao Luo, **Shichang Zhang**, Yuanzhou Chen, Yizhou Sun. "FUSE: Measure-Theoretic Compact Fuzzy Set Representation for Taxonomy Expansion"(**ACL 2024 Findings**)

Haoyu Li*, **Shichang Zhang***, Longwen Tang, Yizhou Sun. "Predicting and Interpreting Energy Barriers of Metallic Glasses with Graph Neural Networks" (**ICML 2024, *equal contribution**)

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" (**ICML 2024, *equal contribution**)

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**)

Journal Papers:
Shichang Zhang*, Ziniu Hu*, Arjun Subramonian, Yizhou Sun. "Motif-driven Contrastive Learning of Graph Representations" (**TKDE, *equal contribution**)

Workshop Papers and Pre-prints:
Shichang Zhang, Da Zheng, Jiani Zhang, Qi Zhu, Xiang Song, Soji Adeshina, Christos Faloutsos, George Karypis, Yizhou Sun. "Hierarchical Compression of Text-Rich Graphs via Large Language Models" (pre-print)

Min Cai, Yuchen Zhang, **Shichang Zhang**, Fan Yin, Difan Zou, Yisong Yue, Ziniu Hu "Self-Control of LLM Behaviors by Compressing Suffix Gradient into Prefix Controller" (MI@ICML2024)

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

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

Junwei Deng*, Ting-Wei Li*, **Shichang Zhang**, Jiaqi Ma. "Efficient Ensembles Improve Training Data Attribution" (pre-print, *equal contribution)

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)

Invited Talks

Explainable AI for Graph Data and More
AI4LIFE Group at Harvard — Feb 2024

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

Instructor, University of California, Los Angeles
CS97: Introduction to Data Science — Summer 2024

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 Knowledge Discovery and Data Mining	2020, 2023, 2024
NeurIPS - Advances in Neural Information Processing Systems	2021 - 2024
ICML - International Conference on Machine Learning	2022 - 2024
ICLR - International Conference on Learning Representations	2024 - 2025
AAAI - AAAI Conference on Artificial Intelligence	2023 - 2025
WSDM - ACM International Web Search and Data Mining Conference	2023 - 2025
SDM - SIAM International Conference on Data Mining	2024
CIKM - ACM Conference on Information and Knowledge Management	2022 - 2023
LOG - Learning on Graphs Conference	2023
ICDM - IEEE International Conference on Data Mining	2021

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
Qianli Wu (UCLA undergrad → Amazon SDE)	Mar. 2023 - Mar. 2024
Haoyu Li (UCLA undergrad → UIUC PhD)	Mar. 2023 - July 2024
Gaotang Li (UMich undergrad → UIUC PhD)	Oct. 2023 - June 2024
Botao Xia (UCLA undergrad → UCLA Master)	Oct. 2023 - Present
Zimin Zhang (UCLA undergrad → UIUC Master)	Oct. 2023 - Present
Min Cai (Shenzhen University Master)	Nov. 2023 - Present
Hongzhe Du (UCLA master)	Mar. 2024 - Present
Karim Saraipour (UCLA master)	Apr. 2024 - Present

Industry Work Experience

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

- Proposed a framework for applying LLMs to text-rich graph data with hierarchical neighborhood compression, which allows LLMs to leverage the graph structure and handle long input text features gathered in a rich neighborhood.
- The proposed method outperformed traditional graph ML models on node classification benchmarks and will be incorporated into the Amazon DGL project.

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, Hugging Face, DGL), C++, R, Java, Linux, Git
Natural Language: Mandarin Chinese (Native), English (Proficient)