Chunhui Zhang, Ph.D. student at Dartmouth

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Research interests

Large Language Model, Efficient AI, Trustworthy Machine Learning

Education

Dartmouth College Hanover, NH, US
Ph.D. student in Computer Science Aug. 2023 – Present
Advisor: Professor Soroush Vosoughi

Brandeis University Waltham, MA, US
Master of Science, Computer Science Sep. 2021 – Jun. 2023
GSAS Fellowship

Northeastern University CN
Bachelor of Science, Computer Science Sep. 2017 – Jun. 2021
Outstanding Honor Thesis Award
Mentor: Professor Xiaoming Yuan

Papers

Efficient and Effective Training: Visual Conditioned Language Generation by LLM
Chunhui Zhang et al. *In Submission.*
Achieved six-fold training speed improvement for SOTA vision-language generative model (BLIP-2; 7 billion parameter model), cutting training time from 100 to 16 GPU hours through efficient visual data reduction.

When Sparsity Meets Contrastive Models: Less Data Can Bring Better Class-Balanced Representations
Chunhui Zhang, Chao Huang, Yijun Tian, Qianlong Wen, Zhongyu Ouyang, Youhuan Li, Yanfang Ye, Chuxu Zhang.
*International Conference on Machine Learning (**ICML**), 2023.*

Chasing All-Round Graph Representation Robustness: Model, Training, and Optimization
Chunhui Zhang, Yijun Tian, Mingxuan Ju, Zheyuan Liu, Yanfang Ye, Nitesh Chawla, and Chuxu Zhang.
*International Conference on Learning Representations (**ICLR**), 2023.*

Mind the Gap: Mitigating the Distribution Gap in Graph Few-shot Learning
Chunhui Zhang, Hongfu Liu, Jundong Li, Yanfang Ye, Chuxu Zhang.
*Transactions on Machine Learning Research (**TMLR**), 2023.*

Fair Graph Representation Learning via Diverse Mixture-of-Experts
Zheyuan Liu*, **Chunhui Zhang* (Co-first author in alphabetical order)**, Yijun Tian, Erchi Zhang, Chao Huang, Yanfang Ye and Chuxu Zhang.
*International World Wide Web Conference (**WWW** / **The Web Conf.**), 2023.*
Note: Co-first author Liu is an undergraduate who was mentored by me and I contribute to the idea, analysis, and writing. Thanks Liu for this pleasant mentoring experience.

Prompt Learning Unlocked for App Promotion in the Wild
Zhongyu Ouyang, Shifu Hou, Shang Ma, Chaoran Chen, **Chunhui Zhang**, Toby Li, Xusheng Xiao, Chuxu Zhang, Yanfang Ye.
NeurIPS 2023 GLFrontiers Workshop.

Boosting Graph Neural Networks via Adaptive Knowledge Distillation
Zhichun Guo, **Chunhui Zhang**, Yujie Fan, Yijun Tian, Chuxu Zhang, and Nitesh Chawla.
*AAAI Conference on Artificial Intelligence (**AAAI**), 2023.*

Heterogeneous Graph Masked Autoencoders
Yijun Tian, Kaiwen Dong, **Chunhui Zhang**, Chuxu Zhang, and Nitesh Chawla.
*AAAI Conference on Artificial Intelligence (**AAAI**), 2023.*

Heterogeneous Temporal Graph Neural Network Explainer
Jiazheng Li, **Chunhui Zhang**, Chuxu Zhang.
*ACM International Conference on Information and Knowledge Management (**CIKM**), 2023.*

Label-invariant Augmentation for Semi-Supervised Graph Classification
Han Yue, **Chunhui Zhang**, Chuxu Zhang, and Hongfu Liu.
*Conference on Neural Information Processing Systems (**NeurIPS**), 2022.*

Co-Modality Imbalanced Graph Contrastive Learning
Yiyue Qian, **Chunhui Zhang**, Yiming Zhang, Qianlong Wen, Yanfang Ye, and Chuxu Zhang.
*Conference on Neural Information Processing Systems (**NeurIPS**), 2022.*

Look Twice as Much as You Say: Scene Graph Contrastive Learning for Self-Supervised Image Caption Generation
Chunhui Zhang, Chao Huang, Youhuan Li, Xiangliang Zhang, Yanfang Ye, and Chuxu Zhang.
*ACM International Conference on Information and Knowledge Management (**CIKM**), 2022.*

GraphBERT: Bridging Graph and Text for Malicious Behavior Detection on Social Media
Jiele Wu, **Chunhui Zhang**, Zheyuan Liu, Erchi Zhang, Steven Wilson, and Chuxu Zhang.
*IEEE International Conference on Data Mining (**ICDM**), 2022.*

Diving into Unified Data-Model Sparsity for Class-Imbalanced Graph Representation Learning
Chunhui Zhang, Chao Huang, Yijun Tian, Qianlong Wen, Zhongyu Ouyang, Youhuan Li, Yanfang Ye, Chuxu Zhang.
*Thirty-sixth Conference on Neural Information Processing Systems-New Frontiers in Graph Learning Workshop (**NeurIPS GLFrontiers Workshop**), 2022*
*37th AAAI Conference on Artificial Intelligence-Workshop on DL-Hardware Co-Design for AI Acceleration (**AAAI DCAA workshop**), 2023*
Best Paper Runner-up Award

Adversarial Cross-View Disentangled Graph Contrastive Learning
Qianlong Wen, Zhongyu Ouyang, **Chunhui Zhang**, Yiyue Qian, Yanfang Ye, Chuxu Zhang.
*Thirty-sixth Conference on Neural Information Processing Systems-New Frontiers in Graph Learning Workshop (**NeurIPS GLFrontiers Workshop**), 2022*

AdaSearch: Many-to-One Unified Neural Architecture Search via A Smooth Curriculum
Chunhui Zhang*, Yongyuan Liang*, Yifan Jiang*.
AAAI-22 Workshop: Learning Network Architecture During Training.

Towards Tailored Models on Private AIoT Devices: Federated Direct Neural Architecture Search
Chunhui Zhang, Xiaoming Yuan, Qianyun Zhang, Guangxu Zhu, Lei Cheng, and Ning Zhang.
*IEEE Internet of Things Journal (**IEEE-IoTJ**)*, Feb. 2022.

3D Enhanced Multi-scale Network For Thoracic Organs Segmentation
Qin Wang, Weibing Zhao, **Chunhui Zhang**, Liyue Zhang, Changmiao Wang, Zhen Li, Shuguang Cui, Guanbin Li.
*IEEE International Symposium on Biomedical Imaging Challenge (**ISBI-W**)*, 2019

Honors and scholarships

Graduate School of Arts and Sciences Fellowship	2021 – 2023
GSAS Ph.D. Student Conference Award	2023
Travel and Research Grant	2022
CIKM Travel Grant Award	2022
AAAI-DCAA Best Paper Runner-up Award	2023

Research experience

Research Assistant Nov. 2018-Aug. 2021

The Chinese University of Hong Kong, China
Shenzhen Research Institute of Big Data (SRIBD)
Mentors: Professor Lei Cheng, Professor Zhen Li
Developed a differentiable method for neural architecture search that significantly reduced GPU hours (80% computational cost/1,000 GPU hours reduction) on ImageNet.

Teaching experience

Teaching Assistant, Computer Science, Brandeis Fall 2021 & Spring 2023
CS 133A: Graph Mining
Graphs are capable of modeling complex social, technological, and biological systems. This course covers the core concepts, models, and algorithms of graph mining.

Teaching Assistant, Computer Science, Brandeis Spring & Fall 2022
CS 165B: Deep Learning
This course covers the core methods and algorithms of deep learning techniques.

Service and outreach

Publicity Chair

KDD 2023 Workshop on Resource-Efficient Learning for Knowledge Discovery

Program Committee/Conference Reviewer

NeurIPS 2023, NeurIPS Datasets and Benchmarks track 2023, AAAI 2023, Learning on Graphs 2023, NeurIPS 2022, CIKM 2022, ICDM 2022, IEEE HPCC 2020

Journal Reviewer

IEEE Transactions on Knowledge and Data Engineering, IEEE Transactions on Network Science and Engineering, ACM Transactions on Intelligent Systems and Technology, Neurocomputing, Big Data

Other interests

Racing – a happy part of my life. I particularly enjoy go-karting and circuit racing (some fun facts: 1st and 2nd place at Supercharged). But there is one type of racing that I have yet to try - my favorite rally driving (My favorite rally driver is Han Han).