Jiayi Yuan

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EDUCATION

Rice University — Houston, TX
Ph.D. in Computer Science (Advisor: Dr. Xia "Ben" Hu) — *Aug. 2022 - Present*

Tsinghua University — Beijing, China
B.Eng. in Computer Science — *Aug. 2017 - Jul. 2021*

RESEARCH INTERESTS

Efficient and Trustworthy Machine Learning
Natural Language Processing (LLMs), Computer Vision, Health Informatics

PUBLICATIONS

Conference Publications

[C1] *Y. Wang, ***J Yuan**, Y. Chuang, Z. Wang, Y. Liu, M. Cusick, P. Kulkarni, Z. Ji, Y. Ibrahim, X. Hu. "DHP Benchmark: Are LLMs Good NLG Evaluators?", *in findings of the 2025 Annual Conference of the Nations of the Americas Chapter of the Association for Computational Linguistics (NAACL Findings), 2025*

[C2] ***J. Yuan**, *H. Liu, *S. Zhong, Y. Chuang, S. Li, G. Wang, D. Le, H. Jin, V. Chaudhary, Z. Xu, Z. Liu, X. Hu. "KV Cache Compression, But What Must We Give in Return? A Comprehensive Benchmark of Long Context Capable Approaches", *in findings of the 2024 Conference on Empirical Methods in Natural Language Processing (EMNLP Findings), 2024*

[C3] G. Wang, Y. Chuang, R. Tang, S. Zhong, **J. Yuan**, H. Jin, Z. Liu, V. Chaudhary, S. Xu, J. Caverlee, X. Hu. "Taylor Unswift: Secured Weight Release for Large Language Models via Taylor Expansion", *in the 2024 Conference on Empirical Methods in Natural Language Processing (EMNLP), 2024*

[C4] ***J. Yuan**, *Z. Liu, H. Jin, S. Zhong, Z. Xu, V. Braverman, B. Chen, X. Hu. "KIVI: A Tuning-Free Asymmetric 2bit Quantization for KV Cache", *in the Forty-first International Conference on Machine Learning (ICML), 2024*

[C5] S. Zhong, D. Le, Z. Liu, Z. Jiang, A. Ye, J. Zhang, **J. Yuan**, K. Zhou, Z. Xu, J. Ma, S. Xu, V. Chaudhary, X. Hu. "GNNs Also Deserve Editing, and They Need It More Than Once", *in the Forty-first International Conference on Machine Learning (ICML), 2024*

[C6] ***J. Yuan**, *R. Tang, Y. Li, Z. Liu, R. Chen, X. Hu. "Setting the Trap: Capturing and Defeating Backdoors in Pretrained Language Models through Honeypots", *in the Thirty-seventh Annual Conference on Neural Information Processing Systems (NeurIPS), 2023*

[C7] **J. Yuan**, R. Tang, X. Jiang, X. Hu. "Large language models for healthcare data augmentation: An example on patient-trial matching", *Best Student Paper, in AMIA Annual Symposium Proceedings (AMIA), 2023*

[C8] C. Chang, **J. Yuan**, S. Ding, Q. Tan, K. Zhang, X. Jiang, X. Hu, N. Zou. "Towards Fair Patient-Trial Matching via Patient-Criterion Level Fairness Constraint", *in AMIA Annual Symposium Proceedings (AMIA), 2023*

[C9] Q. Feng, **J. Yuan**, F.B. Emdad, K. Hanna, X. Hu, Z. He. "Can Attention Be Used to Explain EHR-Based Mortality Prediction Tasks: A Case Study on Hemorrhagic Stroke", *in the 14th ACM International Conference on Bioinformatics, Computational Biology and Health Informatics (ACM-BCB), 2023*

[C10] Z. Yu, Y. Fu, **J. Yuan**, H. You, Y. Lin. "NetBooster: Empowering Tiny Deep Learning By Standing on the Shoulders of Deep Giants", *in Proceedings of the 60th ACM/IEEE Design Automation Conference (DAC), 2023*

[C11] Y. Fu, Y. Yuan, S. Wu, **J. Yuan**, Y. Lin. "Robust Tickets Can Transfer Better: Drawing More Transferable Subnetworks in Transfer Learning", *in Proceedings of the 60th ACM/IEEE Design Automation Conference (DAC), 2023*

[C12] *Y. Fu, *Z. Ye, **J. Yuan**, S. Zhang, S. Li, H. You, Y. Lin. "Gen-NeRF: Efficient and Generalizable Neural Radiance Fields via Algorithm-Hardware Co-Design", *in the 50th IEEE/ACM International Symposium on Computer Architecture (ISCA), 2023*

[C13] ***J. Yuan**, *C. Li, *W. Chen, Y. Lin, A. Sabharwal. "ERSAM: Neural Architecture Search for Energy-Efficient and Real-Time Social Ambiance Measurement", *in 2023 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2023*

[C14] Y. Fu, H. Yang, **J. Yuan**, M. Li, C. Wan, R. Krishnamoorthi, V. Chandra, Y. Lin. "DepthShrinker: A New Compression Paradigm Towards Boosting Real-Hardware Efficiency of Compact Neural Networks", *in the Thirty-ninth International Conference on Machine Learning (ICML), 2022*

[C15] *H. You, *Y. Zhao, *Z. Yu, *C. Wan, Y. Fu, **J. Yuan**, S. Wu, S. Zhang, Y. Zhang, C. Li, V. Boominathan, A. Veeraraghavan, Z. Li, Y. Lin. "EyeCoD: Eye Tracking System Acceleration via FlatCam-Based Algorithm and Accelerator Co-Design", *IEEE Micro Top Pick, in the 49th IEEE/ACM International Symposium on Computer Architecture (ISCA), 2022*

Preprints

[P1] *Y. Chuang, *S. Li, ***J. Yuan**, *G. Wang, *K. Lai, L. Yu, S. Ding, C. Chang, Q. Tan, D. Zha, X. Hu. "Understanding Different Design Choices in Training Large Time Series Models"

[P2] H. Liu, Z. Liu, R. Tang, **J. Yuan**, S. Zhong, Y. Chuang, L. Li, R. Chen, X. Hu. "LoRA-as-an-Attack! Piercing LLM Safety Under The Share-and-Play Scenario"

[P3] C. Chang, S. Ding, **J. Yuan**, K. Zhang, X. Jiang, X. Hu, N. Zou. "Fair Patient-Trial Matching for Underrepresented Groups"

EXPERIENCE

Rice University Houston, TX
Graduate Research Assistant *Sep. 2022 - Present*

- Working on Large Language Models (LLMs): efficient and trustworthy finetuning and inference.
- LLM inference efficiency with KV cache compression. [C2] [C4]
- LLM safety: attack and defense. [C3] [C6] [P2]
- Worked on several projects regarding health informatics. [C7] [C8] [C9] [P3]

Amazon.com, Inc. Seattle, WA
Applied Scientist Intern *May 2024 - Aug. 2024*

- Developed and implemented LLM agents for Amazon stores, focusing on product recommendations and customer interactions, with the goal of fully automating operations that's over $3M Opex.
- Built a RAG-enhanced multimodal ICL pipeline, increasing the model's accuracy from 60% to 90%+.

Rice University Houston, TX
Research Assistant *Aug. 2021 - Aug. 2022*

- Proposed re-parameterization-based efficient training and inference algorithms. [C10] [C14]
- Proposed a NAS pipeline for real-time social ambiance measurement. [C13]
- Worked on several projects regarding machine learning algorithms and systems co-design. [C12] [C15]
- Took part in efficient computer vision challenges: LPCVC-UAV, DAC-SDC.

Baidu Inc. Beijing, China
Research Engineer Intern *Dec. 2020 - Jul. 2021*

- Worked in Content Technology Architecture Group and took charge of processing large-scale data streams.
- Developed and optimized fingerprinting algorithms on massive real-world data. Focused on the image and video deduplication problems in both industry and academia.

Tsinghua University Beijing, China
Research Assistant *Jan. 2019 - May. 2021*

- Designed a diagnosis system for solar panel: computer vision for automated defect detection in the industry.
- Used generative models to improve Deepfake detection (forgery detection of face images).
- Built an efficient and highly scalable distributed approximate graph mining system. [Code]

HONORS AND AWARDS

Rice Engineering Alumni Graduate Student Travel Grant, ***by Rice University*** *Oct. 2024*
D2K Research Mentoring Fellowship, ***by Rice University*** *Sep. 2024*
SDM'24 Doctoral Forum Travel Award, ***by SIAM*** *Mar. 2024*
NeurIPS 2023 Scholar Award, ***by NeurIPS*** *Nov. 2023*
AMIA Best Student Paper, ***by AMIA*** *Nov. 2023*
AMIA 2023 KDDM Student Innovation Award, ***by AMIA*** *Oct. 2023*
IEEE Micro Top Picks, ***by ACM*** *Jul. 2023*

MISC

Teaching

COMP 640 - Graduate Research Seminar in Machine Learning, *Guest Lecturer*
COMP 631 - Information Retrieval, *Guest Lecturer and Teaching Assistant*
COMP 556 - Introduction to Computer Networks, *Teaching Assistant*
COMP 549 - Applied Machine Learning & Data Science Projects, *Teaching Assistant*

Service

Reviewer: ICML, NeurIPS, ICLR, ACL, EMNLP, NAACL, AISTATS, AMIA, ICHI, TCDS