RUIYANG QIN

Address: Drosdick Hall Rm 333, Villanova, PA 19085   Email: [rqin@villanova.edu]
Homepage: `https://ruiyangqin2016.github.io/`   Phone: (+1)404-740-6640

EMPLOYMENT

Villanova University   Villanova, Pennsylvania
Assistant Professor, Electrical and Computer Engineering   Aug. 2025 - Present

SUNY at Buffalo   Buffalo, New York
Visiting Ph.D. student, Computer Science and Engineering   Aug. 2024 - Jan. 2025
Supervisor: Jinjun Xiong

University of Notre Dame   Notre Dame, Indiana
Graduate Assistant, Computer Science and Engineering   Aug. 2022 - May 2025
Advisor: Yiyu Shi

EDUCATION

University of Notre Dame   Notre Dame, Indiana
Ph.D. in Computer Science and Engineering   2022 - 2025

Georgia Institute of Technology   Atlanta, Georgia
B.S./M.S. in Computer Science   2017 - 2021

AWARDS

- William J. McCalla Best Paper Nomination at ICCAD (10 out of 802 papers), 2024, USA
- IAD Academic Fellowship from University at Buffalo, 2024, USA
- Notre Dame Notebaert Professional Development Fund, 2024, USA
- Edison Innovation Fellow, 2024, USA
- DAC Young Fellow, 2024, USA
- DAC Young Fellow, 2023, USA

REVIEW SERVICES

- International Conference on Machine Learning (ICML)
- IEEE International Conference on Robot and Human Interactive Communication (RO-MAN)
- IEEE Intelligent Systems
- Conference on Neural Information Processing Systems (NeurIPS)
- Association for the Advancement of Artificial Intelligence (AAAI)
- Journal of Medical Internet Research (JMIR)
- International Conference on Learning Representations (ICLR)
- Artificial Intelligence and Statistics (AISTATS)

TEACHING

- CSE 30151 - Theory of Computing, Notre Dame, Spring 2023
- CSE 30246 - Database Concepts, Notre Dame, Fall 2022
- CS 6476 - Computer Vision, Georgia Tech, Spring 2021

Talk

- "LLM Distillation and Quantization" in CSE-60556 (LLM) and CSE-60685 (ML for Embedded Systems), University of Notre Dame, 2024
- "Emerging Technology Applications on Personalized Edge LLMs" Tutorial in Design Automation Conference (DAC), 2025
- "In-Memory Computing for LLM Personalization Acceleration" Tutorial in IEEE International Midwest Symposium On Circuits and Systems (MWSCAS), 2025

RESEARCH GRANT
- Participate as PhD student, "On-device Large Language Model Personalization with Algorithm-Hardware Co-design for Healthcare Applications", National Science Foundation, $569,269

RESEARCH GIFT
- Gemma Academic Program (GCP) by Google, 07/21/2024 - 07/21/2025, $15,000

PUBLICATIONS

Conferences

- **Ruiyang Qin**, Dancheng Liu, Gelei Xu, Zheyu Yan, Jinjun Xiong, Yiyu Shi *Tiny-Alignment: Bridging Automatic Speech Recognition with LLM on Edge*, The 44th IEEE/ACM International Conference on Computer-Aided Design (ICCAD), 2025 (acceptance rate 24.7%)
- **Ruiyang Qin**, Pengyu Ren, Zheyu Yan, Liu Liu, Dancheng Liu, Amir Nassereldine, Jinjun Xiong, Kai Ni, Sharon Hu, Yiyu Shi *NVCiM-PT: An NVCiM-assisted Prompt Tuning Framework for Edge LLMs*, Design Automation and Test in Europe (DATE), 2025 (acceptance rate 24%)
- **Ruiyang Qin**, Zheyu Yan, Dewen Zeng, Zhenge Jia, Dancheng Liu, Jianbo Liu, Zhi Zheng, Ningyuan Cao, Kai Ni, Jinjun Xiong, Yiyu Shi, *Robust Implementation of Retrieval-Augmented Generation on Edge-based Computing-in-Memory Architectures*, The 43st IEEE/ACM International Conference on Computer-Aided Design (ICCAD), 2024 (acceptance rate 24.2%) (**Best Paper Nomination**)
- **Ruiyang Qin**, Jun Xia, Zhenge Jia, Meng Jiang, Ahmed Abbasi, Peipei Zhou, Jingtong Hu, Yiyu Shi, *Enabling On-Device Large Language Model Personalization with Self-Supervised Data Selection and Synthesis*, The 61st IEEE/ACM Design Automation Conference (DAC), 2024 (acceptance rate 21.8%)
- **Ruiyang Qin**, Yuting Hu, Zheyu Yan, Jinjun Xiong, Ahmed Abbasi, Yiyu Shi, *FL-NAS: Towards Fairness of NAS for Resource Constrained Devices via Large Language Models*, The 29th Asia and South Pacific Design Automation Conference (ASP-DAC), 2024(acceptance rate 31%)
- John P. Lalor, **Ruiyang Qin**, David Dobolyi, Ahmed Abbasi, *Textagon: Boosting Language Models with Theory-guided Parallel Representations*, The 63rd Annual Meeting of the Association for Computational Linguistics (ACL) - System Demonstration, 2025

- Jiajie Li, Brian R Quaranto, Chenhui Xu, Ishan Mishra, **Ruiyang Qin**, Dancheng Liu, Peter CW Kim, Jinjun Xiong *Recognize Any Surgical Object: Unleashing the Power of Weakly-Supervised Data*, International Conference on Learning Representations (ICLR), 2025 (**Spotlights**)
- Chenhui Xu, Dancheng Liu, Yuting Hu, Jiajie Li, **Ruiyang Qin**, Qingxiao Zheng, Jinjun Xiong *Sub-Sequential Physics-Informed Learning with State Space Model*, International Conference on Machine Learning (ICML), 2025
- Gelei Xu, Ningzhi Tang, Jun Xia, **Ruiyang Qin**, Wei Jin, Yiyu Shi *Enabling Memory-Efficient On-Device Learning via Dataset Condensation*, Design Automation and Test in Europe (DATE), 2025
- Gelei Xu, **Ruiyang Qin**, Zhi Zheng, Yiyu Shi, *An Adaptive System for Wearable Devices to Detect Stress Using Physiological Signals*, Extended Abstract of CHI Conference on Human Factors in Computing Systems: PhysioCHI: Towards Best Practices for Integrating Physiological Signals in HCI (CHI EA), 2024
- Haozheng Luo, **Ruiyang Qin**, Chenwei Xu, Guo Ye, Zening Luo, *Open-Ended Multi-Modal Relational Reasoning for Video Question Answering*, The 32nd IEEE International Conference on Robot and Human Interactive Communication (RO-MAN), 2023
- Zhiding Liang, Zhixin Song, Jinglei Cheng, Zichang He, Ji Liu, Hanrui Wang, **Ruiyang Qin**, Yiru Wang, Song Han, Xuehai Qian, Yiyu Shi, *Hybrid gate-pulse model for variational quantum algorithms*, The 60th IEEE/ACM Design Automation Conference (DAC), 2023 (acceptance rate 22.7%)

Journal

- **Ruiyang Qin**[*], Dancheng Liu[*], Zheyu Yan, Zhaoxuan Tan, Zixuan Pan, Zhenge Jia, Meng Jiang, Ahmed Abbasi, Jinjun Xiong, Yiyu Shi, *Empirical Guidelines for Deploying LLMs onto Resource-constrained Edge Devices*, ACM Transactions on Design Automation of Electronic Systems (in print)
- **Ruiyang Qin**[*], Ryan Cook[*], Kai Yang, Ahmed Abbasi, David Dobolyi, Salman Seyedi, Emily Griner, Hyeokhyen Kwon, Robert O. Cotes, Zifan Jiang, and Gari D. Clifford, *Language Models for Online Depression Detection: A Review and Benchmark Analysis on Remote Interviews*, ACM Transactions on Management Information Systems (in print)
- Marialena Bevilacqua, Kezia Oketch, **Ruiyang Qin**, Will Stamey, Xinyuan Zhang, Yi Gan, Kai Yang, Ahmed Abbasi, *When Automated Assessment Meets Automated Content Generation: Examining Text Quality in the Era of GPTs*, ACM Transactions on Information Systems, Vol.43, No.2, 2024

Under Review

- **Ruiyang Qin**, Haoxinran Yu, Lixuan Wei, Yuxuan Liu, Dancheng Liu, Ahmed Abbasi, Gelei Xu, Zhenge Jia, Zheyu Yan, Xiufan Yu, Zhi Zheng, Jinjun Xiong, Yiyu Shi *Serving Individuals with Language Impairments using Automatic Speech Recognition Models and Large Language Models: Challenges and Opportunities* Nature Medicine
- Yuting Hu, Chenhui Xu, **Ruiyang Qin**, Dancheng Liu, Amir Nassereldine, Yiyu Shi, Jinjun Xiong *Combating Partial Perception Deficit in Autonomous Driving with Multimodal LLM Commonsense*