# RUIYANG QIN

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## RESEARCH INTERESTS

On-Device Learning, Personalized AI/ML, Deep Learning in Healthcare

Objective: *My search aims to enable and optimize AI systems inlcuding LLMs on edge devices, to build a user-wise efficient embedded Edge LLM system, which I believe can satisfy the personalized healthcare and companionship needs in the future.*

## EMPLOYMENT

*University of Notre Dame* Notre Dame, Indiana
Ph.D. Student, Computer Science and Engineering Aug. 2022 - Present
Advisor: Yiyu Shi
Focus: On-device learning and personalized deep learning in healthcare

## EDUCATION

*Georgia Institute of Technology* Atlanta, Georgia
M.S. in Computer Science 2021
B.S. in Computer Science 2020

## REVIEW SERVICES

- IEEE International Conference on Robot and Human Interactive Communication (RO-MAN)
- IEEE Intelligent Systems
- Conference on Neural Information Processing Systems (NeurIPS)

## AWARDS

- DAC Fellowship, 2024, USA
- DAC Fellowship, 2023, USA

## 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

## 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**

- Gelei Xu, **Ruiyang Qin**, Zhi Zheng, Yiyu Shi, *An Adaptive System for Wearable Devices to Detect Stress Using Physiological Signals*, The ACM Conference on Human Factors in Computing Systems (CHI), 2024.
- **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.
- **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.
- 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.

**Journal**

- **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 (TMIS)

**Under Review**

- **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*, The 38th Conference on Neural Information Processing Systems (NeurIPS), 2024
- **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 43rd IEEE/ACM International Conference on Computer-Aided Design (ICCAD), 2024
- 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 (TOIS), Under Review.