Yuchao Qin

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EDUCATION

Peking University   Beijing, China
B.S. in Applied Physics, Department of EECS, CGPA: 89/100 (WES-calculated: 3.81/4.00)   Sep 2022–Jul 2026

RESEARCH EXPERIENCE

Lossless Compression Accelerator Architecture Design   Peking University
Research Assistant to: Prof. Bonan Yan   Sep 2024-Current

- Designed the workflow for a lossless compression accelerator using Probabilistic Circuits
- Developed and implemented Python-based rANS algorithm for compression
- Proposed a novel parallelized architecture to enhance computational efficiency
- Reproduced multiple neural-compression methods, including IVPF and Integer Discrete Flows

Quantization Research and Deployment of LLMs   HOUMO.AI
Research Assistant to: Senior Engineer Fan Wang   Jun 2024-Aug 2024

- Developed an efficient quantization algorithm for the BERT model
- Deployed the optimized BERT quantization model on XinHan1, an AI-specific chip developed by HOUMO.AI
- Conducted research on RAG architecture and inference overhead optimization

Process-in-Memory (PIM) Chip Design   Peking University
Research Assistant to: Prof. Yuchao Yang   Mar 2024-May 2024

- Reviewed over 30 academic papers and authored a comprehensive review on PIM research
- Presented four paper reviews at research group meetings

PUBLICATIONS

- **Author:** Anjunyi Fan1, Xuejie Liu1, Anji Liu, Qiuping Wu1, **Yuchao Qin**, Guy Van den Broeck, Yitao Liang, Bonan Yan
- **Title:** Scaling Up Tractable Probabilistic Models Through Software-Hardware Codesign
- **Status:** Submitted to 2025 Design Automation Conference (DAC)

RELEVANT COURSES

- **Circuit Design**: Principles and Design of Digital Systems(Honor Track); Principles of Analog Circuits(Honor Track); Advanced Analog Integrated Circuits Design; Advanced Digital Integrated Circuits Design
- **Chip Design**: Optimization and Machine Learning in VLSI Design Automation; Chip Design using High-level Programming Language
- **Device & Physics**: Physics of Semiconductor; Integrated Circuit Devices; Integrated Circuit Manufacturing Technology; Quantum Mechanics

- **Artificial Intelligence**: Machine Learning for Electronics Information Engineering(Honor Track)

- **Signal Processing**: Signals and Systems (Honor Track)

- **Computing**: Introduction to Computation; Data Structure and Algorithm; Optimization for Computing System

Skill Summary

- **Languages:** Mandarin (Native); English
- **Programming:** C++, Python, MATLAB, Julia
- **Circuit Design and Simulation:** Verilog, Cadence Virtuoso, HSpice

Scholarships and Awards

- Silver Medal in the 38th Chinese Physics Olympiad Finals — 2021
- Jiukun Scholarship — 2022–2023
- Merit Student at Peking University — 2023
- Most Valuable Player in "Peking Soccer Cup" — 2023
- Tiktok Scholarship for EE Student — 2023–2024
- Having been selected as a member of the inaugural Experimental Class in Electronic Information Science — 2023–2026

Extra-curriculum Outreach

- Captain of EECS soccer team at Peking University — Oct, 2022–Current
  Led the team to the semifinals three years in a row, achieved one runner-up and two third-place finishes.
- Propaganda Principal of Experimental Class of Electronic Information Science (E Class) — Sep, 2023–Current
  Set up a WeChat public account
- Member of PKU AI Innovation and Entrepreneurship Club — Jun, 2024–Current

- Member of PKU Blockchain — Jun, 2024–Current