

XIE-RU LI

 dotandlog.com  [DotandLog](https://github.com/DotandLog)  xieru.julian.lee@gmail.com  +(886)972858481

RESEARCH INTERESTS

My research focuses on **parallel and distributed computing** for large-scale HPC systems, with particular interest in scalable algorithms, system architectures, and compiler toolchains for quantum-classical hybrid computing.

EDUCATION

National Cheng Kung University

M.Sc. in Computer Science and Information Engineering

Sep 2024 - Jul 2026

Advisor: [Prof. Chia-Heng Tu](#)

National Cheng Kung University

B.Sc. in Hydraulic and Ocean Engineering

Sep 2019 - Jul 2024

Advisor: [Prof. Ting-Jung Chang](#)

PUBLICATION

Xie-Ru Li, Po-Hsuan Huang, Chia-Heng Tu & Shih-Hao Hung. (2026, Sep). MillionQAOA: A Dividable QAOA Framework for Solving Million-Vertex-Scale Max-Cut Problems. In *Proceedings of the 55th International Conference on Parallel Processing (ICPP '26)*.

Yu-Hui Wu, **Xie-Ru Li**, Po-Hsuan Huang, Teik-Hui Lee, Chia-Heng Tu & Shih-Hao Hung. (2026, Jul). PIQ: A Pluggable Interface for Quantum-Classical Execution Backends for Variational Quantum Algorithms. To appear in *Preceeding of ACM International Conference on Resilience, AI and Cyber-Systems (RACS '26)*.

Po-Hsuan Huang, **Xie-Ru Li**, Chi Chuang, Chia-Heng Tu & Shih-Hao Hung. (2026, Mar). ParaQAOA: Efficient Parallel Divide-and-Conquer QAOA for Large-Scale Max-Cut Problems Beyond 10,000 Vertices. Submitted to *ACM Transactions on Parallel Computing (TOPC)*. Under review.

RESEARCH EXPERIENCE

Advanced System Research Lab

Sep 2023 - Current

National Cheng Kung University | Advisor: Prof. Chia-Heng Tu & Prof. Shih-Hao Hung

Tainan, Taiwan

- Designed and implemented a divide-and-conquer QAOA framework that scales Max-Cut solving from 16,000 to 1,000,000 vertices, engineering the system around large-scale GPU computing infrastructure and modern network topology.
- Achieved up to 11.5 $\times$ speedup over classical Max-Cut algorithms at the 50,000-vertex scale.
- Proposed a pluggable quantum-classical execution backend interface to optimize and accelerate variational quantum algorithms (VQAs).
- Three papers accepted/submitted to *ICPP'26*, *RACS'26* and *TOPC* respectively.

AI Computer Architecture Lab

Feb 2022 – Aug 2023

National Cheng Kung University | Advisor: Prof. Ting-Jung Chang & Prof. Wei-Fen Lin

Tainan, Taiwan

- Contributed to BlackBear, a reconfigurable AI inference accelerator for large image applications.
- Explored DeepCABAC for deep neural network compression on the accelerator.
- Built a parser to visualize DNN models in MLIR format, aiding compression and model loading.
- Implemented the SoC's Master CPU runtime to handle FPGA interrupts and schedule inference tasks.
- Developed a Model Loadable Parser and integrated/tested the FPGA-based hardware accelerator.

AWARDS AND HONORS

SoC Design Contest Finalist, *36th IEEE International System-on-Chip Conference (SOCC)*

2023

TEACH EXPERIENCE

Computer Organization

Feb 2025 - Jul 2025

Teaching Assistant

Tainan, Taiwan

EXTRA-CURRICULAR ACTIVITIES

Special Recruitment Program, Department of Computer Science and Information Engineering, NCKU

2024 - Present

Program Associate

Tainan, Taiwan

- Co-designed and administered an annual hands-on, systems-related entrance exam for around 60 high school applicants each year, as part of NCKU's special-talent admission pathway that bypasses standard entrance exams.
- Built and maintained a GitLab-based exam platform and CI/CD scoring pipeline to automate exam evaluation.

WORK EXPERIENCE

Plasma Science Application Lab, NCKU

Apr 2024 - Jan 2025

System Administrator

Tainan, Taiwan

- Maintained lab servers, managing user accounts, storage, and networking for research operations.
- Built Docker-based environments and configured HPC software stacks (MPI, OpenMP) to isolate toolchains and support parallel simulation workloads.

SKILLS

Languages: English (TOEFL: 4.5), Chinese (Native)

Programming Languages: C++ / C / Python / Chisel

System Related: CUDA / Slurm / MPI / OpenMP / Docker / Git / GitLab