

CHOU-YING HSIEH

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 [Chou-Ying Hsieh](#) |  [PunchShadow](#) |  [IEEE](#) |  [Google Scholar](#) |  [Web of Science](#)

Taipei, Taiwan





EDUCATION

- **Graduate Institute of Electrical Engineering, National Taiwan University** Jul. 2018 - Present
PhD Candidate Taipei, Taiwan
- **Department of Electrical Engineering, National Cheng Kung University** Jul. 2013 - Jun. 2017
Bachelor Tainan, Taiwan

EXPERIENCE

- **MediaTek**  Jul. 2018 - Sep. 2018
Software Intern Hsinchu, Taiwan
 - Developed automatic memory layout optimization achieving cache miss ratio reduction in smart phone modem chip system
 - Implemented reinforcement learning on cache simulator, enhancing cache miss rate by 10%-15%
- **BiiLabs**  Jul. 2017 - Sep. 2017
Intern Tainan, Taiwan
 - Developed a distributed ledger technology (DLT) system upon the chain called IOTA
 - Maintained the documentation

PROJECTS

- **GPU-accelerated Graph Algorithms** Sep. 2022 - Present
Tools: C++, CUDA 
 - Target on the providing unified and flexible platform for graph algorithms on GPUs
 - Developed different graph algorithms on GPUs for acceleration
 - Implemented breadth-first-search (BFS), maximum biclique enumeration, and push-relabel algorithm (maximum flow problem), achieving the state-of-the-art execution time speedup
- **Graph Neural Network** Sep. 2023 - Present
Tools: Python, PyG, DGL 
 - Developed Self-reinforced graph contrastive learning (SRGCL), achieving the state-of-the-art performance comparing to existing GCL framework on the graph-level classification task.
- **Physical-aware Design Space Exploration** Sep. 2022 - Jul. 2023
Tools: C, Python, GNN, Synthesis simulators
 - Developed a GNN-based hardware predictor for improving the sampling quality on Bayesian optimization.
 - Integrated open-sourced place-and-route tools, taking the congestion into the consideration of exploration.

PATENTS AND PUBLICATIONS


C=CONFERENCE, J=JOURNAL, P=PATENT, S=IN SUBMISSION, T=THESIS

- [C.1] **Chou-Ying Hsieh**, Po-Hsiu Cheng, Chia-Ming Chang, Sy-Yen Kuo (2023). **A decentralized frontier queue for improving scalability of breadth-first-search on gpus**. In *Design, Automation & Test in Europe Conference & Exhibition (DATE)*, pp. 1-6. IEEE. 17-19 April 2023, Antwerp, Belgium.
- [C.2] Yen-Fu Liu, **Chou-Ying Hsieh**, Sy-Yen Kuo. (2023). **Boomerang: Physical-Aware Design Space Exploration Framework on RISC-V SonicBOOM Microarchitecture**. In *2023 IEEE 34th International Conference on Application-specific Systems, Architectures and Processors (ASAP)*, pp. 85-93. IEEE. 19-21 July 2023, Porto, Portugal.
- [S.1] **Chou-Ying Hsieh**, Chia-Ming Chang, Po-Hsiu Cheng, Sy-Yen Kuo (2024). **Engineering A Workload-balanced Push-Relabel Algorithm for Massive Graphs on GPUs**. Manuscript submitted for publication in *IEEE Transactions on Parallel and Distributed Systems*.
- [S.2] **Chou-Ying Hsieh**, Po-Chieh Lin, Sy-Yen Kuo (2024). **Accelerating Maximal Biclique Enumeration on GPUs**. Manuscript submitted for publication in *IEEE Transactions on Computers*.



SKILLS

- **Programming Languages:** C/C++, CUDA, Python, Rust, Shell script
- **Data Science & Machine Learning:** PyTorch, Tensorflow, PyG, DGL
- **Cloud Technologies:** Amazon EC2
- **DevOps & Version Control:** Tool 1, Tool 2, Tool 3, Tool 4, Tool 5
- **Specialized Area:** High-performance computing, Parallel computing, GPU-accelerated graph processing system, Graph neural network, GPU-accelerated EDA tools, Software transactional memory (STM)
- **Research Skills:** Writing and publishing academic papers, Algorithm development and optimization, Graph processing systems on GPUs, Graph neural networks and high-performance processing on GPUs

LEADERSHIP EXPERIENCE

- **Research Lead** Sep. 2020 - Present
National Taiwan University/ Dependable Distributed Systems and Networks Lab 
 - Developed research directions and managing the progress of projects.
 - Managed master's students in project participation and supervising their master's theses
 - Assisted in supervising over 10 master's students to successfully complete their studies and contributed to the execution of two three-year projects funded by Taiwan's National Science Council.

TEACHING

- **Teaching Assistant - Fault Tolerant Computing** Sep. 2022 - Jan. 2023
Graduate Institute of Electrical Engineering, National Taiwan University 
 - Assisted in preparing and delivering course materials on fault-tolerant systems and techniques for ensuring reliability.
 - Evaluated assignments, quizzes, and exams, providing detailed feedback to enhance student learning.
- **Teaching Assistant - Discrete Mathematics** Feb. 2020 - Jul. 2020
Department of Electrical Engineering, National Taiwan University 
 - Assisted in creating assignments and quizzes to test comprehension of topics like Boolean algebra and relations.
 - Evaluated assignments, quizzes, and exams, providing detailed feedback to enhance student learning.

ADDITIONAL INFORMATION

Languages: Chinese (Proficiency level), English (Proficiency level)

Interests: Researching, Surfing, Dancing, Camping