Lixin Liu

PERSONAL INFORMATION

Rm 913, SHB
The Chinese University of Hong Kong
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RESEARCH INTERESTS

Machine Learning, Physical Design, GPU Acceleration in VLSI CAD, Distributed Deep Learning System

EDUCATION

The Chinese University of Hong Kong (CUHK) — Hong Kong SAR, China
Ph.D. Computer Science & Engineering (Advisor: Prof. Evangeline F.Y. Young) — 2019 - Present

South China University of Technology (SCUT) — Guangzhou, China
B.Eng. Electronic Science and Technology (Talented Student Program) — 2015 - 2019

HONORS & AWARDS

- Second Place Award at Contest on Microarchitecture Design Space Exploration, ICCAD — 2022
- Talent Development Scholarship, CUHK — 2022
- First Place Award at Contest on Routing with Cell Movement, ICCAD — 2020
- DAC Young Fellow Award, DAC — 2020
- First Place Award at Contest on Wafer-Scale Deep Learning Accelerator Placement, ISPD — 2020
- Full Postgraduate Studentship, CUHK — 2019 - Present
- Undergraduate Scholarship, SCUT — 2018
- Jianzhong Cai Scholarship, SCUT — 2016
- Talented Student Program — 2015

EXPERIENCE

CUHK EDA — Hong Kong SAR, China
Research Postgraduate Student (Mentor: Prof. Evangeline F.Y. Young) — Aug. 2019 - Present
- Acceleration of Training Large-Scale DNNs on Distributed Systems (In submission)
- GPU-Accelerated Global Placement in VLSI CAD (DAC 2022)
- Placement and Routing Co-Optimization (ICCAD 2021)
- GPU-Accelerated ILT (ICCAD 2020)

Guangzhou Yuexiu Industrial Investment Fund Management — Guangzhou, China
Investment Analyst Intern, Advanced Manufacture Team — May. 2019 - Jun. 2019

GF Fund Management — Guangzhou, China
Quantitative Analyst Intern, International Business Department — Dec. 2018 - Apr. 2019

Vision and Learning Lab, UC Merced — Merced, CA
Visiting Student (Mentor: Prof. Ming-Hsuan Yang) — Sep. 2018 - Nov. 2018

Human Computer Intelligent Communication Interface Lab, SCUT — Guangzhou, China
Research Assistant (Mentor: Prof. Xin Zhang) — Nov. 2016 - Aug. 2018

PUBLICATIONS

Conference Paper

1. **Lixin Liu**, Bangqi Fu, Martin D.F. Wong, Evangeline F.Y. Young, "Xplace: An Extremely Fast and Extensible Global Placement Framework." *ACM/IEEE Design Automation Conference, (**DAC**)*, 2022.

2. Fangzhou Wang, **Lixin Liu**, Jingsong Chen, Jinwei Liu, Xinshi Zang, Martin DF Wong, "Starfish: An Efficient P&R Co-Optimization Engine with A*-based Partial Rerouting" *IEEE/ACM International Conference On Computer Aided Design, (**ICCAD**)*, 2021.

3. Bentian Jiang, Xiaopeng Zhang, **Lixin Liu**, Evangeline F.Y. Young, "Building up End-to-end Mask Optimization Framework with Self-training." *ACM International Symposium on Physical Design (**ISPD**)*, 2021.

4. Bentian Jiang, **Lixin Liu**, Yuzhe Ma, Hang Zhang, Bei Yu, Evangeline F.Y. Young, "Neural-ILT: Migrating ILT to Neural Networks for Mask Printability and Complexity Co-optimization." *IEEE/ACM International Conference on Computer-Aided Design (**ICCAD**)*, 2020.

5. Bentian Jiang, Jingsong Chen, Jinwei Liu, **Lixin Liu**, Fangzhou Wang, Xiaopeng Zhang, Evangeline F.Y. Young, "CU.POKer: Placing DNNs on Wafer-Scale AI Accelerator with Optimal Kernel Sizing." *IEEE/ACM International Conference on Computer-Aided Design (**ICCAD**)*, 2020.

6. Weiyang Liu, Rongmei Lin, Zhen Liu, **Lixin Liu**, Zhiding Yu, Bo Dai, Le Song, "Learning towards Minimum Hyperspherical Energy." *Conference on Neural Information Processing Systems (**NeurIPS**)*, 2018.

Journal Paper

1. Bentian Jiang, **Lixin Liu**, Yuzhe Ma, Bei Yu, Evangeline F.Y. Young, "Neural-ILT 2.0: Migrating ILT to Domain-specific and Multi-task-enabled Neural Network." *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (**TCAD**)*, 2021.

2. Bentian Jiang, Jingsong Chen, Jinwei Liu, **Lixin Liu**, Fangzhou Wang, Xiaopeng Zhang, Evangeline F.Y. Young, "CU. POKer: Placing DNNs on WSE with Optimal Kernel Sizing and Efficient Protocol Optimization." *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, (**TCAD**)*, 2021.

REVIEWER ICCAD 2020, DAC 2021, GLSVLSI 2021, ICCAD 2022, TCAD 2022

TEACHING

- CENG 1540: Fundamental Computing With C++ 2021-22 Term 1
- CENG 2720: Building Web Applications 2020-21 Term 2
- CENG 2400: Microcomputer Systems 2020-21 Term 1
- ENGG 1120: Linear Algebra for Engineers 2019-20 Term 2
- CSCI 3170: Introduction to Database Systems 2019-20 Term 1

PROGRAMMING SKILLS C/C++, Python, Java, CUDA, Matlab, PyTorch, Caffe, HTML, CSS, Kotlin, VHDL