Yao Lai

laiyao1.github.io

Email : laiyao1@163.com

Mobile : +86-152-2192-5373

EDUCATION

The University of Hong Kong (QS rank: 11) — Hong Kong S.A.R.
Ph.D. in Computer Science; HKU-MMLab; Advisor: Prof. Ping Luo — *Sep. 2021 – Nov. 2025*

Tsinghua University (QS rank: 17) — Beijing, China
M.Eng. in Software Engineering; GPA: 3.84/4.00; Rank: 1/98; Advisor: Prof. Xiaojun Ye — *Sep. 2017 – Jun. 2020*

Fudan University (QS rank: 30) — Shanghai, China
B.Eng. in Microelectronics; GPA: 3.87/4.00; Rank: 2/69; Advisor: Prof. Xuan Zeng, Prof. Minge Jing — *Sep. 2013 – Jun. 2017*

RESEARCH EXPERIENCE

University of Cambridge (QS rank: 6) — Cambridge, United Kingdom
Postdoctoral Research Associate; Advisor: Prof. Robert Mullins — *Dec. 2025 – Present*

The University of Texas at Austin (QS rank: 68) — Austin, Texas, United States
Research Scholar; UTDA Lab; Advisor: Prof. David Z. Pan (IEEE/ACM Fellow) — *Feb. 2024 – Jul. 2024*

AWARD

- **NeurIPS Scholar Award** — *2024*
- **Best Oral Presentation of Westlake Future Scholars Forum** — *2023*
- **Outstanding Graduates of Software School, Tsinghua University** — *2020*
- **Excellent undergraduate thesis of Fudan University** *(Top 1 of 69)* — *2017*
- **Shanghai Outstanding Graduates** *(Top 5%)* — *2017*

SCHOLARSHIP

- **Hong Kong PhD Fellowship** — *2021 – 2025*
- **HKU Presidential PhD Scholar** — *2021 – 2025*
- **Shanghai Scholarship** *(Top 3%)* — *2016*
- **National Scholarship** *(Top 1 of 69)* — *2015*
- **Freshman Scholarship of Fudan University** *(Top 5%)* — *2013*

PUBLICATIONS

- **Analog IC Design & Automation**

  - [1] **Yao Lai**, Souradip Poddar, Sungyoung Lee, Guojin Chen, Mengkang Hu, Bei Yu, Ping Luo, David Z. Pan. "AnalogCoder-Pro: Unifying Analog Circuit Generation and Optimization via Multi-modal LLMs." arXiv, 2025.

  - [2] **Yao Lai**, Sungyoung Lee, Guojin Chen, Souradip Poddar, Mengkang Hu, David Z. Pan, Ping Luo. "AnalogCoder: Analog Circuit Design via Training-Free Code Generation." AAAI Conference on Artificial Intelligence (AAAI) **oral** (Top 5%), 2025.

  - [3] Souradip Poddar, Youngmin Oh, **Yao Lai**, Hanqing Zhu, Bosun Hwang, David Z Pan. "INSIGHT: Universal Neural Simulator for Analog Circuits Harnessing Autoregressive Transformers." Design Automation Conference (DAC), 2025.

- **Physical Design**

  - [4] **Yao Lai**, Jinxin Liu, Zhentao Tang, Wang Bin, Jianye Hao, Ping Luo. "ChiPFormer: Transferable Chip Placement via Offline Decision Transformer." International Conference on Machine Learning (ICML), 2023.

  - [5] **Yao Lai**, Yao Mu, Ping Luo. "MaskPlace: Fast Chip Placement via Reinforced Visual Representation Learning." Advances in Neural Information Processing Systems (NeurIPS) **spotlight**, 2022.

  - [6] Guojin Chen, Keren Zhu, Seunggeun Kim, Hanqing Zhu, **Yao Lai**, Bei Yu, David Z. Pan. "LLM-Enhanced Bayesian Optimization for Efficient Analog Layout Constraint Generation." arXiv, 2024.

  - [7] Yunqi Shi, Xi Lin, Zhiang Wang, Siyuan Xu, Shixiong Kai, **Yao Lai**, Chengrui Gao, Ke Xue, Mingxuan Yuan, Chao Qian, et al. "Re^{2}MaP: Macro Placement by Recursively Prototyping and Packing Tree-based Relocating." arXiv, 2025.

  - [8] **Yao Lai**, Ming'e Jing. "On-chip Network Source Routing Algorithm Based on A* Algorithm Optimization." Journal of Fudan University, 2018. (in Chinese)

- **Logic Design & Computer Arithmetic**

- [9] **Yao Lai**, Jinxin Liu, David Z. Pan, Ping Luo. "Scalable and Effective Arithmetic Tree Generation for Adder and Multiplier Designs." Advances in Neural Information Processing Systems (NeurIPS) **spotlight** (Top 2%), 2024.
- [10] Jing Wang, Zheng Li, Lei Li, Fan He, Liyu Lin, **Yao Lai**, Yan Li, Xiaoyang Zeng, Yufeng Guo. "Principle-Guided Verilog Optimization: IP-Safe Knowledge Transfer via Local-Cloud Collaboration." arXiv, 2025.

- **Circuit Representation & Modeling**
  - [11] Sungyoung Lee, **Yao Lai**, Ziyi Wang, Seunggeun Kim, Taekyun Lee, David Z. Pan. "Dual-Augmentation Graph Contrastive Pretraining for Transistor-level Integrated Circuits." arXiv, 2025.
- **Multimodal Foundation Models**
  - [12] Jin Wang*, **Yao Lai***, Aoxue Li, Shifeng Zhang, Jiacheng Sun, Ning Kang, Chengyue Wu, Zhenguo Li, Ping Luo. "FUDOKI: Discrete Flow-based Unified Understanding and Generation via Kinetic-Optimal Velocities." Advances in Neural Information Processing Systems (NeurIPS) **spotlight** (Top 2%), 2025.
- **AI for Security and Planning**
  - [13] **Yao Lai**, Guolou Ping, Xiaojun Ye. "OpenSmax: Unknown Domain Generation Algorithm Detection." European Conference on Artificial Intelligence (ECAI), 2020.
  - [14] Lan Zhang, **Yao Lai**, Xiaojun Ye. "Attention Mechanism Based Detection of Malware Call Sequences." Computer Science, 2019. (in Chinese)
  - [15] Lizheng Deng, Hongyong Yuan, Lida Huang, Shuan Yan, **Yao Lai**. "Post-earthquake Search via an Autonomous UAV: Hybrid Algorithm and 3D Path Planning." IEEE ICNC-FSKD, 2018.

Programming Skills

- **Languages**: C/C++, Python, SQL, Java, Perl, MATLAB, Verilog HDL
- **Tools**: Pytorch, Tensorflow, Scikit-learn

Language Skills

- **English**: **Advanced** TOEFL-iBT: 102
- **Japanese**: **Intermediate** JLPT-N2 (Japanese Language Proficiency Test)
- **Cantonese**: **Intermediate**

Work Experience

- **Huawei Noah**   Beijing, China
  Research Intern   *July 2022 – Feb. 2023*
  - **Responsibility**: Assisted with software engineering and research tasks on chip design automation.
- **ByteDance**   Beijing, China
  Software Engineer   *July 2020 – July 2021*
  - **Responsibility**: Support page parsing function in search engine.
- **Google**   Beijing, China
  Software Engineering Intern   *June 2019 – Sept. 2019*
  - **Responsibility**: Migrated one query language of knowledge graph to a new language.
- **NVIDIA**   Shanghai, China
  VLSI Physical Design Intern   *Jan. 2016 - May 2016*
  - **Responsibility**: Written VLSI flow automation scripts for VLSI Test Analysis.