Jing Mai

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Bio

I am a third-year Ph.D. student in the Department of Computer Science at Peking University associated with the Center for Energy-Efficient Computing and Applications (CECA). I am a member of the *PKU-IDEA Lab*, advised by *Prof. Yibo Lin*. Previously, I received the B.S. degree in Computer Science and Technology from Peking University in 2021. My research focuses are machine learning-assisted EDA; my broader interests include MLSys, concurrency and probabilistic modeling.

Education

Ph.D. in Computer Science Sept. 2021 – Present

Center for Energy-efficient Computing and Applications (CECA), Peking University *Beijing, China*

Advisor: Prof. Yibo Lin

B.S. in Computer Science and Technology Sept. 2017 – June 2021

School of Electronics Engineering and Computer Science (EECS), Peking University *Beijing, China*

Publications

(* denotes alphabetical ordering or equal contribution)

Refereed Conference Papers

[C1] **Jing Mai***, Jiarui Wang*, Zhixiong Di, Guojie Luo, Yun Liang and Yibo Lin. *OpenPARF: An Open-Source Placement and Routing Framework for Large-Scale Heterogeneous FPGAs with Deep Learning Toolkit. International Conference on ASIC* (**ASICON**), 2023. (**Invited Paper**)

[C2] Jiarui Wang, **Jing Mai**, Zhixiong Di, Yibo Lin. *A Robust FPGA Router with Concurrent Intra-CLB Rerouting. 28th Asia and South Pacific Design Automation Conference* (**ASP-DAC**), 2023.

[C3] Yifan Chen, **Jing Mai**, Xiaohan Gao, Muhan Zhang, Yibo Lin. *MacroRank: Ranking Macro Placement Solutions Leveraging Translation Equivariancy. 28th Asia and South Pacific Design Automation Conference* (**ASP-DAC**), 2023.

[C4] **Jing Mai**, Yibai Meng, Zhixiong Di, Yibo Lin. *Multi-Electrostatic FPGA Placement Considering SLICEL-SLICEM Heterogeneity and Clock Feasibility. 59th ACM/IEEE Design Automation Conference* (**DAC**), 2022.

[C5] **Jing Mai***, Zizheng Guo*, Yibo Lin. *Ultrafast CPU/GPU Kernels for Density Accumulation in Placement. 58th ACM/IEEE Design Automation Conference* (**DAC**), 2021.

Journal Papers

[J1] Zhixiong Di, Runzhe Tao, **Jing Mai**, Lin Chen, Yibo Lin. *LEAPS: Topological-Layout-Adaptable Multi-Die FPGA Placement for Super Long Line Minimization. IEEE Transactions on Circuits and Systems I: Regular Papers* (**TCSI**), 2023.

[J2] **Jing Mai**, Jiarui Wang, Zhixiong Di, Yibo Lin. *Multi-Electrostatic FPGA Placement Considering SLICEL-SLICEM Heterogeneity, Clock Feasibility, and Timing Optimization. IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems* (**TCAD**), 2023.

[J3] **Jing Mai***, Jiarui Wang*, Zhixiong Di, Yibo Lin. *OpenPARF: An Open-Source Placement and Routing Framework for Large-Scale Heterogeneous FPGAs with Deep Learning Toolkit. Journal of Electronics and Information Technology* (**JEIT**), 2023.

[J4] Yihua Cheng, Zejia Fan, **Jing Mai**, Yifan Wu, Pengcheng Xu, Yuxuan Yan, Zhenxin Fu, Yun Liang. *Critique of "Planetary Normal Mode Computation: Parallel Algorithms, Performance, and Reproducibility" by SCC Team From Peking University. IEEE Transactions on Parallel and Distributed Systems* (**TPDS**), 2021.

Book Chapters ....

[B1] Yibo Lin, Zizheng Guo and **Jing Mai**. *Deep Learning Framework for Placement, Machine Learning Applications in Electronic Design Automation*, Springer, 2023, edited by Haoxing Ren and Jiang Hu. (**Invited Book Chapter**)

Experiences

Chinese University of Hong Kong (CUHK)   **July 2020 – Aug 2020**
Summer Intern, co-advised by Prof. Yibo Lin and Prof. Bei Yu   *Shenzhen, China*
Topics: Electrostatics-Based global placement for FPGAs

Honors

- Honors for Merit Student 三好学生, *Peking University*   Sept 2023
- Ubiquant Scholarship 九坤奖学金 (top 15%), *Peking University*   Sept 2023
- Industry Contribution Award 产业贡献奖, *Department of Design Automation and Computer System*   April 2023
- Honors for Outstanding Undergraduate Graduates in Beijing 北京市优秀毕业生 (top 1%)   May 2021
- Honors for Outstanding Undergraduate Graduates in Peking University 北京大学优秀毕业生   May 2021
- Xiaomi Scholarship 小米奖学金, *Peking University*   Dec 2020
- Honors for Merit Student 三好学生, *Peking University* (top 5%)   Dec 2020
- Huawei Scholarship 华为奖学金, *Peking University*   Dec 2019
- Honors for Merit Student 三好学生, *Peking University* (top 5%)   Dec 2019
- Honors for Outstanding Academic Performance 优秀科研奖, *Peking University*   Dec 2018

Awards

- IEEE/ACM MLCAD 2023 FPGA Macro-Placement Contest, second place   Sept 2023
- EDA Elite Challenge **EDA 设计精英挑战赛**, Second Prize   Dec 2021
- Beijing Challenge Cup Competition 北京市挑战杯, Second Prize   May 2021
- The 43rd ACM-ICPC Asia Regional Competition, Gold Award   Oct 2018
- China Collegiate Programming Contest (CCPC) Guilin Regional Competition, Silver Award   Sept 2018

Teaching and Mentoring Experience

- **Teaching Assistant** – *Optimization and Machine Learning in VLSI Design Automation*, Peking University   2022

Social Activities

- Associate captain of the ice hockey team *Fire kirin* 火麒麟 in Peking University   2022
- Staff of the ACM-ICPC World Final   2018

Skills

Programming Languages and Softwares

C/C++, Python, Java, Pytorch, Tensorflow, LaTeX, Git, CUDA, Docker, Data Analysis/Visualization(Pandas)

Languages

Mandarin, Cantonese, English (CET-6 573/710), Japanese

hobbies

Ice hockey, Badminton