

Guojin Chen

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Current Position

- Visiting Student**, *The University of Texas at Austin* 2023.08 – Present
Supervisor : Prof. David Z. Pan
- Ph.D. Candidate**, *The Chinese University of Hong Kong* 2021.08 – Present
Supervisor : Prof. Bei Yu

Education

- Ph.D. in Computer Science**, *The Chinese University of Hong Kong* 2021 – Present
- M.S. in Computer Science**, *The Chinese University of Hong Kong* 2019 – 2020
- B.S. in Computer Science**, *Huazhong University of Science and Technology* 2015 – 2019

Research Interests

- Design for manufacturing (DFM) / Electronic design automation (EDA)
- Computational lithography / Resolution enhancement technologies
- Deep Learning for VLSI / Physics-informed deep learning

Publications [Google Scholar; 103+ citations, h-index: 5+]

Representative publications that I am a primary author on are **highlighted**.

Conference papers

- [C12] Open-Source Differentiable Lithography Imaging Framework
Guojin Chen, Hao Geng, Bei Yu, and David Z. Pan
(**SPIE 2024**) *SPIE Advanced Lithography + Patterning*
- [C11] AlphaSyn: Logic Synthesis Optimization with Efficient Monte Carlo Tree Search
Zehua Pei, Fangzhou Liu, Zhuolun He, **Guojin Chen**, Haisheng Zheng, Keren Zhu, and Bei Yu
(**ICCAD 2023**) *Proceedings of the 42th International Conference on Computer-Aided Design*
- [C10] Physics-Informed Optical Kernel Regression Using Complex-valued Neural Fields
Guojin Chen, Zehua Pei, Haoyu Yang, Yuzhe Ma, Bei Yu, and Martin Wong
(**DAC 2023**) *ACM/IEEE Design Automation Conference (Best score in DFM track.)*
- [C9] DiffPattern: Layout Pattern Generation via Discrete Diffusion
Zixiao Wang, Yunheng Shen, Wenqian Zhao, Yang Bai, **Guojin Chen**, Farzan Farnia, and Bei Yu
(**DAC 2023**) *ACM/IEEE Design Automation Conference*
- [C8] GPU-accelerated Matrix Cover Algorithm for Multiple Patterning Layout Decomposition
Guojin Chen, Haoyu Yang, and Bei Yu
(**SPIE 2023**) *DTCO and Computational Patterning II*
- [C7] Efficient Point Cloud Analysis Using Hilbert Curve.
Wanli Chen, Xinge Zhu, **Guojin Chen**, and Bei Yu
(**ECCV 2022**) *European Conference on Computer Vision*
- [C6] AdaOPC: A Self-Adaptive Mask Optimization Framework For Real Design Patterns
Wenqian Zhao, Xufeng Yao, Ziyang Yu, **Guojin Chen**, Yuzhe Ma, Bei Yu, and Martin Wong
(**ICCAD 2022**) *Proceedings of the 41th International Conference on Computer-Aided Design*
- [C5] LayoutTransformer: Generating Layout Patterns with Transformer via Sequential Pattern Modeling
Liangjian Wen, Yi Zhu, Lei Ye, **Guojin Chen**, Bei Yu, Jianzhuang Liu, and Chunjing Xu
(**ICCAD 2022**) *Proceedings of the 41th International Conference on Computer-Aided Design*

- [C4] DevelSet: Deep Neural Level Set for Instant Mask optimization
Guojin Chen, Ziyang Yu, Hongduo Liu, Yuzhe Ma, and Bei Yu
 (ICCAD 2021) *Proceedings of the 40th International Conference on Computer-Aided Design*
- [C3] Learning Point Clouds in EDA.
 Wei Li, **Guojin Chen**, Haoyu Yang, Ran Chen, and Bei Yu
 (ISPD 2021) *ACM International Symposium on Physical Design*
- [C2] DAMO: Deep Agile Mask Optimization for Full Chip Scale
Guojin Chen, Wanli Chen, Yuzhe Ma, Haoyu Yang, and Bei Yu
 (ICCAD 2020) *Proceedings of the 39th International Conference on Computer-Aided Design*
- [C1] A GPU-enabled Level Set Method for Mask Optimization
 Ziyang Yu, **Guojin Chen**, Yuzhe Ma, and Bei Yu
 (DATE 2020) *IEEE/ACM Proceedings Design, Automation and Test in Europe*

Journal papers.....

- [J5] Ultra-Fast Source Mask Optimization via Conditional Discrete Diffusion
Guojin Chen, Zixiao Wang, Bei Yu, David Z. Pan, and Martin D.F. Wong
 (TCAD 2024) *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*
- [J4] L2O-ILT: Learning to Optimize Inverse Lithography Techniques
 Binwu Zhu, Su Zheng, Ziyang Yu, **Guojin Chen**, Yuzhe Ma, Fan Yang, Bei Yu, and Martin Wong
 (TCAD 2023) *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*
- [J3] A GPU-Enabled Level-Set Method for Mask Optimization
 Ziyang Yu, **Guojin Chen**, Yuzhe Ma, and Bei Yu
 (TCAD 2023) *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*
- [J2] DevelSet: Deep Neural Level Set for Instant Mask optimization
Guojin Chen, Ziyang Yu, Hongduo Liu, Yuzhe Ma, and Bei Yu
 (TCAD 2023) *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*
- [J1] DAMO: Deep Agile Mask Optimization for Full-Chip Scale
Guojin Chen, Wanli Chen, Qi Sun, Yuzhe Ma, Haoyu Yang, and Bei Yu
 (TCAD 2022) *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*

Open Source Repositories

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|--|------|
| 1. OpenOPC/OpenILT — ★66 — <i>Open-source inverse lithography technology (ILT) framework</i> | 2023 |
| 2. ai4eda/awesome-AI4EDA — ★78 — <i>A curated paper list of existing AI for EDA studies.</i> | 2023 |

Experiences

Research Assistant, <i>The Chinese University of Hong Kong</i>	2020 – 2021
Research Intern, <i>Tencent</i>	2018 – 2019

Awards

Ph.D. Studentship	2021 – 2025
By Chinese University of Hong Kong, 2021-2025	
Outstanding Graduate	2019
By Huazhong University of Science and Technology	

Ongoing Projects

Differentiable Computational Lithography. Revamping lithography with a GPU-accelerated, differentiable workflow based on Abbe imaging, using automatic differentiation to target diverse resolution enhancement objectives.

Professional Activities

Paper Review / External Review.....	
Design Automation Conference (DAC)	2021-2023
AAAI Conference on Artificial Intelligence (AAAI)	2022-2023
IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD)	2022-2023