

林亦波

助理教授 ◊ 设计自动化与计算系统系 ◊ 集成电路学院

理科 5 号楼, 100871 ◊ 北京大学

yibolin@pku.edu.cn ◊ www.yibolin.com

研究方向

面向超大规模集成电路设计自动化的建模和优化、深度学习及其应用、硬件加速

教育经历

德克萨斯大学奥斯汀分校

2013 年 8 月 - 2018 年 5 月

博士学位, 电子与计算机工程系

指导老师: David Z. Pan

博士毕业论文: “Bridging Design and Manufacturing Gap through Machine Learning and Machine-Generated Layout”

(学积分 3.96/4.0)

上海交通大学

2009 年 9 月 - 2013 年 6 月

学士学位, 微电子学院

(学积分 91.17/100)

(排名 1/60)

工作经历

北京大学 (Peking University)

2019 年 7 月 - 现在

助理教授

集成电路学院设计自动化与计算系统系 (自 2021 年 11 月)

信息科学技术学院高效计算与应用中心

德克萨斯大学奥斯汀分校 (UT Austin)

2018 年 6 月 - 2019 年 6 月

博后

日本东芝存储 (Toshiba Memory)

2017 年 5 月 - 2017 年 8 月

实习

Memory lithography group

比利时微电子研究中心 (IMEC)

2016 年 9 月 - 2016 年 11 月

实习

Design technology co-optimization for emerging lithography options

香港中文大学 (CUHK)

2016 年 6 月 - 2016 年 8 月

实习

Quantum computing

铿腾半导体 (Cadence)

2015 年 5 月 - 2015 年 8 月

实习

Routability driven detailed placement

授课经历

主讲	芯片设计自动化与智能优化	2021-2022 年春
主讲	计算概论 B	2020-2021 年秋
客座讲座	EE382M: VLSI CAD & Optimizations	2018 年秋
客座讲座	EE382M: VLSI Physical Design Automation	2017 年秋
研究生课程助教	EE382M: VLSI I	2014 年秋

奖项及荣誉

最佳论文 (4/249)	DATE	2022 年
最佳论文 (2/3495, 4 年总和)	TCAD	2021 年
最佳论文	ISPD	2020 年
最佳论文提名	ASPDAC	2020 年
最佳论文 (1/201) & 提名 (5/201)	DAC	2019 年
最佳论文提名	ISPD	2019 年
首届最佳论文	Integration, the VLSI Journal	2018 年
Graduate Continuing Fellowship	德克萨斯大学奥斯汀分校	2017 年
Franco Cerrina Memorial 最佳学生论文	SPIE	2016 年
A. Richard Newton Young Student Fellow	DAC	2014 年
国家奖学金	上海交通大学	2012 年
三星奖学金	上海交通大学	2011 年
二等奖学金	上海交通大学	2010 年

学术服务

技术程序委员会成员

- ACM/IEEE Design Automation Conference (DAC): 2020.
- IEEE/ACM International Conference on Computer-Aided Design (ICCAD): 2018, 2019, 2020, 2021.
- IEEE International Conference on Computer Design (ICCD): 2019.
- IEEE/ACM Asia and South Pacific Design Automation Conference (ASPDAC): 2021, 2022.
- ACM International Symposium on Physical Design (ISPD): 2020.
- ACM/IEEE Workshop on Machine Learning for CAD (MLCAD): 2021.
- Workshop on Synthesis And System Integration of Mixed Information technologies (SASIMI): 2021.
- IEEE Electron Devices Technology and Manufacturing Conference (EDTM): 2021.
- IEEE International Conference on Artificial Intelligence Circuits and Systems (AICAS): 2022.

期刊审稿人

- IEEE Transaction on Computer-Aided Design of Integrated Circuits and Systems (TCAD).

- IEEE Transactions on Computers (TC).
- ACM Transaction on Design Automation of Electronic Systems (TODAES).
- SPIE Journal of Micro/Nanolithography, MEMS, and MOEMS (JM3).
- Elsevier, Integration, the VLSI Journal (Integration).

期刊编辑

- ACM Transaction on Design Automation of Electronic Systems (TODAES) Special Issue on MLCAD, 2022.

执行委员会成员

- ACM/IEEE Workshop on Machine Learning for CAD (MLCAD) 2021, financial chair.

出版物

书籍章节

- [B1] **Yibo Lin** and David Z. Pan, “[Machine Learning in Physical Verification, Mask Synthesis, and Physical Design](#)”, Machine Learning in VLSI Computer-Aided Design, Springer, 2018, edited by Abe Elfedel, Duane Boning and Xin Li. (**Invited Book Chapter**)

期刊论文

- [J32] **Yibo Lin**, Tong Qu, Zongqing Lu, Yajuan Su and Yayi Wei, “[Asynchronous Reinforcement Learning Framework and Knowledge Transfer for Net Order Exploration in Detailed Routing](#)”, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD), 2021. (accepted)
- [J31] Zizheng Guo, Mingwei Yang, Tsung-Wei Huang and **Yibo Lin**, “[A Provably Good and Practically Efficient Algorithm for Common Path Pessimism Removal in Large Designs](#)”, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD), 2021. (accepted)
- [J30] Martin Rapp, Hussam Amrouch, **Yibo Lin**, Bei Yu, David Z. Pan, Marilyn Wolf and Jörg Henkel, “[MLCAD: A Survey of Research in Machine Learning for CAD](#)”, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD), 2021. (accepted)
- [J29] Wei Li, Jialu Xia, Yuzhe Ma, Jialu Li, **Yibo Lin** and Bei Yu, “[Adaptive Layout Decomposition with Graph Embedding Neural Networks](#)”, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD), 2021. (accepted)
- [J28] Tsung-Wei Huang, Dian-Lun Lin, Chun-Xun Lin and **Yibo Lin**, “[Taskflow: A Lightweight Parallel and Heterogeneous Task Graph Computing System](#)”, IEEE Transactions on Parallel and Distributed Systems (TPDS), Aug, 2021.
- [J27] Yibai Meng, Wuxi Li, **Yibo Lin** and David Z. Pan, “[elfPlace: Electrostatics-based Placement for Large-Scale Heterogeneous FPGAs](#)”, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD), Jan, 2021.

- [J26] Wei Li, Yuzhe Ma, Qi Sun, Zhang Lu , **Yibo Lin**, Iris Hui-Ru Jiang, Bei Yu and David Z. Pan, “[OpenMPL: An Open Source Layout Decomposer](#)”, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD), 2020. (accepted)
- [J25] Tsung-Wei Huang, **Yibo Lin**, Chun-Xun Lin, Guannan Guo and Martin Wong, “[Cpp-Taskflow: A General-purpose Parallel Task Programming System at Scale](#)”, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD), Sep, 2020.
- [J24] Hao Chen, Mingjie Liu, Biying Xu, Keren Zhu, Xiyuan Tang, Shaolan Li, **Yibo Lin**, Nan Sun and David Z. Pan, “[MAGICAL: An Open-Source Fully Automated Analog IC Layout System from Netlist to GDSII](#)”, IEEE Design & Test, Sep, 2020. (accepted)
- [J23] Jing Chen, Mohamed Baker Alawieh, **Yibo Lin**, Maolin Zhang, Jun Zhang, Yufeng Guo and David Z. Pan, “[Automatic Selection of Structure Parameters of Silicon on Insulator Lateral Power Device Using Bayesian Optimization](#)”, IEEE Electron Device Letters (EDL), Aug, 2020. (accepted)
- [J22] Ying Chen, **Yibo Lin**, Rui Chen, Lisong Dong, Ruixuan Wu, Tianyang Gai, Le Ma, Yajuan Su and Yayi Wei, “[EUV Multilayer Defect Characterization via Cycle-Consistent Learning](#)”, Optics Express, Jun, 2020.
- [J21] **Yibo Lin**, Zixuan Jiang, Jiaqi Gu, Wuxi Li, Shounak Dhar, Haoxing Ren, Brucek Khailany and David Z. Pan, “[DREAMPlace: Deep Learning Toolkit-Enabled GPU Acceleration for Modern VLSI Placement](#)”, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD), Jun, 2020. (**Best Paper Award**)
- [J20] Junzhe Cai, Changhao Yan, Yudong Tao, **Yibo Lin**, Sheng-Guo Wang, David Z. Pan and Xuan Zeng, “[A Novel and Unified Full-chip CMP Model Aware Dummy Fill Insertion Framework with SQP-Based Optimization Method](#)”, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD), Jun, 2020. (accepted)
- [J19] Mohamed Baker Alawieh, **Yibo Lin**, Zaiwei Zhang, Meng Li, Qixing Huang and David Z. Pan, “[GAN-SRAF: Sub-Resolution Assist Feature Generation using Generative Adversarial Networks](#)”, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD), May, 2020. (accepted)
- [J18] **Yibo Lin**, Wuxi Li, Jiaqi Gu, Haoxing Ren, Brucek Khailany and David Z. Pan, “[ABCDPlace: Accelerated Batch-based Concurrent Detailed Placement on Multi-threaded CPUs and GPUs](#)”, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD), Feb, 2020. (accepted)
- [J17] Jing Chen, Mohamed Baker Alawieh, **Yibo Lin**, Maolin Zhang, Jun Zhang, Yufeng Guo and David Z. Pan, “[Powernet: SOI Lateral Power Device Breakdown Prediction With Deep Neural Networks](#)”, IEEE Access, Feb, 2020.
- [J16] Ying Chen, **Yibo Lin**, Lisong Dong, Tianyang Gai, Rui Chen, Yajuan Su, Yayi Wei and David Z. Pan, “[SoulNet: Ultrafast Optical Source Optimization Utilizing Generative Neural Networks for Advanced Lithography](#)”, Journal of Micro/Nanolithography, MEMS, and MOEMS (JM3), Nov, 2019.

- [J15] **Yibo Lin**, Meng Li, Yuki Watanabe, Taiki Kimura, Tetsuaki Matsunawa, Shigeki Nojima and David Z. Pan, “[Data Efficient Lithography Modeling with Transfer Learning and Active Data Selection](#)”, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD), Oct, 2019.
- [J14] Ying Chen, **Yibo Lin**, Tianyang Gai, Yajuan Su, Yayi Wei and David Z. Pan, “[Semi-Supervised Hotspot Detection with Self-Paced Multi-Task Learning](#)”, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD), Apr, 2019.
- [J13] Jing Chen, **Yibo Lin**, Yufeng Guo, Maolin Zhang, Mohamed Baker Alawieh and David Z. Pan, “[Lithography Hotspot Detection Using a Double Inception Module Architecture](#)”, Journal of Micro/Nanolithography, MEMS, and MOEMS (JM3), Mar, 2019.
- [J12] **Yibo Lin**, Bei Yu, Meng Li and David Z. Pan, “[Layout Synthesis for Topological Quantum Circuits with 1D and 2D Architectures](#)”, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD), Aug, 2018.
- [J11] Meng Li, Bei Yu, **Yibo Lin**, Xiaoqing Xu, Wuxi Li and David Z Pan, “[A practical split manufacturing framework for trojan prevention via simultaneous wire lifting and cell insertion](#)”, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD), Jul, 2018.
- [J10] Xiaoqing Xu, **Yibo Lin**, Meng Li, Tetsuaki Matsunawa, Shigeki Nojima, Chikaaki Kodama, Toshiya Kotani and David Z. Pan, “[Subresolution Assist Feature Generation With Supervised Data Learning](#)”, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD), Jun, 2018.
- [J9] **Yibo Lin**, Bei Yu, Xiaoqing Xu, Jih-Rong Gao, Natarajan Viswanathan, Wen-Hao Liu, Zhuo Li, Charles J Alpert and David Z. Pan, “[MrDP: Multiple-row detailed placement of heterogeneous-sized cells for advanced nodes](#)”, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD), Jun, 2018.
- [J8] Wuxi Li, **Yibo Lin**, Meng Li, Shounak Dhar and David Z. Pan, “[UTPlaceF 2.0: A High-Performance Clock-Aware FPGA Placement Engine](#)”, ACM Transactions on Design Automation of Electronic Systems (TODAES), Jun, 2018.
- [J7] **Yibo Lin**, Bei Yu and David Z. Pan, “[High performance dummy fill insertion with coupling and uniformity constraints](#)”, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD), Sep, 2017.
- [J6] **Yibo Lin**, Bei Yu, Biying Xu and David Z. Pan, “[Triple patterning aware detailed placement toward zero cross-row middle-of-line conflict](#)”, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD), Jul, 2017.
- [J5] Xiaoqing Xu, **Yibo Lin**, Meng Li, Jiaojiao Ou, B. Cline and D. Z. Pan, “[Redundant local-Loop insertion for unidirectional routing](#)”, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD), Jul, 2017.
- [J4] **Yibo Lin**, Bei Yu, Yi Zou, Zhuo Li, Charles J Alpert and David Z. Pan, “[Stitch aware detailed placement for multiple e-beam lithography](#)”, Integration, the VLSI Journal, Jun, 2017. (**Best Paper Award**)

- [J3] **Yibo Lin**, Xiaoqing Xu, Bei Yu, Ross Baldick and David Z. Pan, “[Triple/quadruple patterning layout decomposition via linear programming and iterative rounding](#)”, Journal of Micro/Nanolithography, MEMS, and MOEMS (JM3), Jun, 2017.
- [J2] Bei Yu, Xiaoqing Xu, Subhendu Roy, **Yibo Lin**, Jiaojiao Ou and David Z. Pan, “[Design for manufacturability and reliability in extreme-scaling VLSI](#)”, Science China Information Sciences, May, 2016. (**Invited paper**)
- [J1] Bei Yu, Xiaoqing Xu, Jih-Rong Gao, **Yibo Lin**, Zhuo Li, Charles Alpert and David Z. Pan, “[Methodology for standard cell compliance and detailed placement for triple patterning lithography](#)”, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD), May, 2015.

会议论文

- [C65] Jing Mai, Yibai Meng, Zhixiong Di and **Yibo Lin**, “[Multi-Electrostatic FPGA Placement Considering SLICEL-SLICEM Heterogeneity and Clock Feasibility](#)”, ACM/IEEE Design Automation Conference (DAC), San Francisco, CA, Jul 10-14, 2022. (accepted)
- [C64] Zizheng Guo and **Yibo Lin**, “[Differentiable-Timing-Driven Global Placement](#)”, ACM/IEEE Design Automation Conference (DAC), San Francisco, CA, Jul 10-14, 2022. (accepted)
- [C63] Zizheng Guo, Mingjie Liu, Jiaqi Gu, Shuhan Zhang, David Z. Pan and **Yibo Lin**, “[A Timing Engine Inspired Graph Neural Network Model for Pre-Routing Slack Prediction](#)”, ACM/IEEE Design Automation Conference (DAC), San Francisco, CA, Jul 10-14, 2022. (accepted)
- [C62] Zuodong Zhang, Zizheng Guo, **Yibo Lin**, Runsheng Wang and Ru Huang, “[AVATAR: An Aging- and Variation-Aware Dynamic Timing Analyzer for Application-based DVAFS](#)”, ACM/IEEE Design Automation Conference (DAC), San Francisco, CA, Jul 10-14, 2022. (accepted)
- [C61] Bowen Wang, Guibao Shen, Dong Li, Jianye Hao, Wulong Liu, Yu Huang, Hongzhong Wu, **Yibo Lin**, Guangyong Chen and Pheng Ann Heng, “[LHNN: Lattice Hypergraph Neural Network for VLSI Congestion Prediction](#)”, ACM/IEEE Design Automation Conference (DAC), San Francisco, CA, Jul 10-14, 2022. (accepted)
- [C60] Zuodong Zhang, Zizheng Guo, **Yibo Lin**, Runsheng Wang and Ru Huang, “[EventTimer: Fast and Accurate Event-Based Dynamic Timing Analysis](#)”, IEEE/ACM Proceedings Design, Automation and Test in Europe (DATE), Antwerp, Belgium, Mar 14-23, 2022. (accepted)
- [C59] Siting Liu, Peiyu Liao, Zhitang Chen, Wenlong Lv, **Yibo Lin** and Bei Yu, “[FastGR: Global Routing on CPU-GPU with Heterogeneous Task Graph Scheduler](#)”, IEEE/ACM Proceedings Design, Automation and Test in Europe (DATE), Antwerp, Belgium, Mar 14-23, 2022. (**Best Paper Award**)(accepted)
- [C58] Peiyu Liao, Siting Liu, Zhitang Chen, Wenlong Lv, **Yibo Lin** and Bei Yu, “[DREAMPlace 4.0: Timing-driven Global Placement with Momentum-based Net Weighting](#)”, IEEE/ACM Proceedings Design, Automation and Test in Europe (DATE), Antwerp, Belgium, Mar 14-23, 2022. (accepted)
- [C57] Haoyu Yang, Kit Fung, Yuxuan Zhao, **Yibo Lin** and Bei Yu, “[Mixed-Cell-Height Legalization on CPU-GPU Heterogeneous Systems](#)”, IEEE/ACM Proceedings Design, Automation and Test

in Eurpoe (DATE), Antwerp, Belgium, Mar 14-23, 2022. (accepted)

- [C56] Xun Jiang, **Yibo Lin** and Zhongfeng Wang, “[FPGA-Accelerated Maze Routing Kernel for VLSI Designs](#)”, IEEE/ACM Asia and South Pacific Design Automation Conference (ASPDAC), Virtual Conference, Jan 17-20, 2022.
- [C55] Kexing Zhou, Zizheng Guo, Tsung-Wei Huang and **Yibo Lin**, “[Efficient Critical Paths Search Algorithm using Mergeable Heap](#)”, IEEE/ACM Asia and South Pacific Design Automation Conference (ASPDAC), Virtual Conference, Jan 17-20, 2022.
- [C54] Zizheng Guo, Tsung-Wei Huang and **Yibo Lin**, “[A Provably Good and Practically Efficient Algorithm for Common Path Pessimism Removal in Large Designs](#)”, ACM/IEEE Design Automation Conference (DAC), San Francisco, CA, Dec 05-09, 2021.
- [C53] Guannan Guo, Tsung-Wei Huang, **Yibo Lin** and Martin Wong, “[GPU-accelerated Path-based Timing Analysis](#)”, ACM/IEEE Design Automation Conference (DAC), San Francisco, CA, Dec 05-09, 2021.
- [C52] Zizheng Guo, Jing Mai and **Yibo Lin**, “[Ultrafast CPU/GPU Kernels for Density Accumulation in Placement](#)”, ACM/IEEE Design Automation Conference (DAC), San Francisco, CA, Dec 05-09, 2021.
- [C51] Xiaohan Gao, Mingjie Liu, David Z. Pan and **Yibo Lin**, “[Interactive Analog Layout Editing with Instant Placement Legalization](#)”, ACM/IEEE Design Automation Conference (DAC), San Francisco, CA, Dec 05-09, 2021.
- [C50] Zizheng Guo, Tsung-Wei Huang and **Yibo Lin**, “[HeteroCPPR: Accelerating Common Path Pessimism Removal with Heterogeneous CPU-GPU Parallelism](#)”, IEEE/ACM International Conference on Computer-Aided Design (ICCAD), Virtual Conference, Nov 01-04, 2021.
- [C49] Guannan Guo, Tsung-Wei Huang, **Yibo Lin** and Martin Wong, “[GPU-accelerated Critical Path Generation with Path Constraints](#)”, IEEE/ACM International Conference on Computer-Aided Design (ICCAD), Virtual Conference, Nov 01-04, 2021.
- [C48] Tong Qu, **Yibo Lin**, Tianyang Gai, Xiaojing Su, Shuhan Wang, Bojie Ma, Yajuan Su and Yayi Wei, “[Litho-Aware Redundant Local-Loop Insertion Framework With Convolutional Neural Network](#)”, Proceedings of SPIE, San Jose, CA, Sep 27, 2021.
- [C47] Tong Qu, **Yibo Lin**, Zongqing Lu, Yajuan Su and Yayi Wei, “[Asynchronous Reinforcement Learning Framework for Net Order Exploration in Detailed Routing](#)”, IEEE/ACM Proceedings Design, Automation and Test in Eurpoe (DATE), Virtual Conference, Feb 01-05, 2021.
- [C46] Siting Liu, Qi Sun, Peiyu Liao, **Yibo Lin** and Bei Yu, “[Global Placement with Deep Learning-Enabled Explicit Routability Optimization](#)”, IEEE/ACM Proceedings Design, Automation and Test in Eurpoe (DATE), Virtual Conference, Feb 01-05, 2021.
- [C45] Hongjia Li, Mengshu Sun, Tianyun Zhang, Olivia Chen, Nobuyuki Yoshikawa, Bei Yu, Yanzhi Wang and **Yibo Lin**, “[Towards AQFP-Capable Physical Design Automation](#)”, IEEE/ACM Proceedings Design, Automation and Test in Eurpoe (DATE), Virtual Conference, Feb 01-05, 2021.
- [C44] Xiaohan Gao, Chenhui Deng, Mingjie Liu, Zhiru Zhang, David Z. Pan and **Yibo Lin**, “[Layout](#)

[Symmetry Annotation for Analog Circuits with Graph Neural Networks](#)”, IEEE/ACM Asia and South Pacific Design Automation Conference (ASPDAC), Tokyo, Japan, Jan 18-21, 2021.

[C43] **Yibo Lin**, “[Deep Learning for Mask Synthesis and Verification: A Survey](#)”, IEEE/ACM Asia and South Pacific Design Automation Conference (ASPDAC), Tokyo, Japan, Jan 18-21, 2021. (**Invited paper**)

[C42] Jiaqi Gu, Zixuan Jiang, **Yibo Lin** and David Z. Pan, “[DREAMPlace 3.0: Multi-Electrostatics Based Robust VLSI Placement with Region Constraints](#)”, IEEE/ACM International Conference on Computer-Aided Design (ICCAD), Nov 2-5, 2020.

[C41] Zizheng Guo, Tsung-Wei Huang and **Yibo Lin**, “[GPU-Accelerated Static Timing Analysis](#)”, IEEE/ACM International Conference on Computer-Aided Design (ICCAD), Nov 2-5, 2020.

[C40] **Yibo Lin**, “[GPU Acceleration in VLSI Back-end Design: Overview and Case Studies](#)”, IEEE/ACM International Conference on Computer-Aided Design (ICCAD), Nov 2-5, 2020. (**Invited tutorial**)

[C39] Wei Ye, Mohamed Baker Alawieh, Yuki Watanabe, Shigeki Nojima, **Yibo Lin** and David Z. Pan, “[TEMPO: Fast Mask Topography Effect Modeling with Deep Learning](#)”, ACM International Symposium on Physical Design (ISPD), Taipei, Taiwan, Sep 20-23, 2020. (**Best Paper Award**)

[C38] Wei Li, Jialu Xia, Yuzhe Ma, Jialu Li, **Yibo Lin** and Bei Yu, “[Adaptive Layout Decomposition with Graph Embedding Neural Networks](#)”, ACM/IEEE Design Automation Conference (DAC), San Francisco, Jul 19-23, 2020.

[C37] **Yibo Lin**, David Z. Pan, Haoxing Ren and Brucek Khailany, “[DREAMPlace 2.0: Open-Source GPU-Accelerated Global and Detailed Placement for Large-Scale VLSI Designs](#)”, China Semiconductor Technology International Conference (CSTIC), Shanghai, China, Jun, 2020. (**Invited paper**)

[C36] Rachel Selina Rajarathnam, **Yibo Lin**, Yier Jin and David Z. Pan, “[ReGDS: A Reverse Engineering Framework from GDSII to Gate-level Netlist](#)”, IEEE International Workshop on Hardware-Oriented Security and Trust (HOST), San Jose, CA, May 4, 2020.

[C35] Mingjie Liu, Wuxi Li, Keren Zhu, Biying Xu, **Yibo Lin**, Linxiao Shen, Xiyuan Tang, Nan Sun and David Z. Pan, “[S3DET: Detecting System Symmetry Constraints for Analog Circuits with Graph Similarity](#)”, IEEE/ACM Asia and South Pacific Design Automation Conference (ASPDAC), Jan 13-16, 2020. (**Best Paper Nomination**)

[C34] Mohamed Baker Alawieh, Wuxi Li, **Yibo Lin**, Love Singhal, Mahesh Iyer and David Z. Pan, “[High-Definition Routing Congestion Prediction for Large-Scale FPGAs](#)”, IEEE/ACM Asia and South Pacific Design Automation Conference (ASPDAC), Jan 13-16, 2020.

[C33] Wuxi Li, **Yibo Lin** and David Z. Pan, “[elfPlace: Electrostatics-based Placement for Large-Scale Heterogeneous FPGAs](#)”, IEEE/ACM International Conference on Computer-Aided Design (ICCAD), Westminster, CO, Nov 4-7, 2019.

[C32] Keren Zhu, Mingjie Liu, **Yibo Lin**, Biying Xu, Shaolan Li, Xiyuan Tang, Nan Sun and David Z. Pan, “[GeniusRoute: A New Analog Routing Paradigm Using Generative Neural Network Guid-](#)

- ance”, IEEE/ACM International Conference on Computer-Aided Design (ICCAD), Westminster, CO, Nov 4-7, 2019.
- [C31] Chengyue Gong, Zixuan Jiang, Dilin Wang, **Yibo Lin**, Qiang Liu and David Z. Pan, “[Mixed Precision Neural Architecture Search for Energy Efficient Deep Learning](#)”, IEEE/ACM International Conference on Computer-Aided Design (ICCAD), Westminster, CO, Nov 4-7, 2019.
- [C30] Biying Xu, Keren Zhu, Mingjie Liu, **Yibo Lin**, Shaolan Li, Xiyuan Tang, Nan Sun and David Z. Pan, “[MAGICAL: Toward Fully Automated Analog IC Layout Leveraging Human and Machine Intelligence](#)”, IEEE/ACM International Conference on Computer-Aided Design (ICCAD), Westminster, CO, Nov 4-7, 2019. (**Invited paper**)
- [C29] Wei Li, Yuzhe Ma, Qi Sun, **Yibo Lin**, Iris Hui-Ru Jiang, Bei Yu and David Z Pan, “[OpenMPL: An Open Source Layout Decomposer](#)”, International Conference on ASIC (ASICON), Chongqing, China, Oct, 2019. (**Invited paper**)
- [C28] **Yibo Lin**, Shounak Dhar, Wuxi Li, Haoxing Ren, Brucek Khailany and David Z. Pan, “[DREAM-Place: Deep Learning Toolkit-Enabled GPU Acceleration for Modern VLSI Placement](#)”, ACM/IEEE Design Automation Conference (DAC), Las Vegas, NV, Jun 2-6, 2019. (**Best Paper Award**)
- [C27] Wei Ye, Mohamed Baker Alawieh, **Yibo Lin** and David Z. Pan, “[LithoGAN: End-to-End Lithography Modeling with Generative Adversarial Networks](#)”, ACM/IEEE Design Automation Conference (DAC), Las Vegas, NV, Jun 2-6, 2019. (**Best Paper Nomination**)
- [C26] Biying Xu, **Yibo Lin**, Xiyuan Tang, Shaolan Li, Linxiao Shen, Nan Sun and David Z. Pan, “[WellGAN: Generative-Adversarial-Network-Guided Well Generation for Analog/Mixed-Signal Circuit Layout](#)”, ACM/IEEE Design Automation Conference (DAC), Las Vegas, NV, Jun 2-6, 2019.
- [C25] Mohamed Baker Alawieh, **Yibo Lin**, Zaiwei Zhang, Meng Li, Qixing Huang and David Z. Pan, “[GAN-SRAF: Sub-Resolution Assist Feature Generation Using Conditional Generative Adversarial Networks](#)”, ACM/IEEE Design Automation Conference (DAC), Las Vegas, NV, Jun 2-6, 2019.
- [C24] **Yibo Lin**, Zhao Song and Lin F. Yang, “[Towards a Theoretical Understanding of Hashing-Based Neural Nets](#)”, International Conference on Artificial Intelligence and Statistics (AISTATS), Okinawa, Japan, Apr 16-18, 2019.
- [C23] Biying Xu, Shaolan Li, Chak-Wa Pui, Derong Liu, Linxiao Shen, **Yibo Lin**, Nan Sun and David Z. Pan, “[Device Layer-Aware Analytical Placement for Analog Circuits](#)”, ACM International Symposium on Physical Design (ISPD), San Francisco, CA, Apr 14-17, 2019. (**Best Paper Nomination**)
- [C22] Wei Ye, Mohamed Baker Alawieh, Meng Li, **Yibo Lin** and David Z. Pan, “[Litho-GPA: Gaussian Process Assurance for Lithography Hotspot Detection](#)”, IEEE/ACM Proceedings Design, Automation and Test in Europe (DATE), Florence, Italy, Mar 25-29, 2019.
- [C21] Ying Chen, **Yibo Lin**, Tianyang Gai, Yajuan Su, Yayi Wei and David Z. Pan, “[Semi-Supervised Hotspot Detection with Self-Paced Multi-Task Learning](#)”, IEEE/ACM Asia and South Pacific Design Automation Conference (ASPDAC), Tokyo, Japan, Jan 21-24, 2019.

- [C20] Wei Ye, Mohamed Baker Alawieh, **Yibo Lin** and David Z. Pan, “[Tackling Signal Electromigration with Learning-Based Detection and Multistage Mitigation](#)”, IEEE/ACM Asia and South Pacific Design Automation Conference (ASPDAC), Tokyo, Japan, Jan 21-24, 2019.
- [C19] Wei Ye, **Yibo Lin**, Meng Li, Qiang Liu and David Z. Pan, “[LithoROC: Lithography Hotspot Detection with Explicit ROC Optimization](#)”, IEEE/ACM Asia and South Pacific Design Automation Conference (ASPDAC), Tokyo, Japan, Jan 21-24, 2019. (**Invited paper**)
- [C18] **Yibo Lin**, Mohamed Baker Alawieh, Wei Ye and David Z. Pan, “[Machine Learning for Yield Learning and Optimization](#)”, IEEE International Test Conference (ITC), Phoenix, Arizona, Oct, 2018. (**Invited paper**)
- [C17] Jiong Zhang, **Yibo Lin**, Zhao Song and Inderjit S Dhillon, “[Learning Long Term Dependencies via Fourier Recurrent Units](#)”, International Conference on Machine Learning (ICML), Stockholm, Sweden, Jun 10-15, 2018.
- [C16] **Yibo Lin**, Yuki Watanabe, Taiki Kimura, Tetsuaki Matsunawa, Shigeki Nojima, Meng Li and David Z. Pan, “[Data Efficient Lithography Modeling with Residual Neural Networks and Transfer Learning](#)”, ACM International Symposium on Physical Design (ISPD), Monterey, CA, Mar 25-28, 2018.
- [C15] Meng Li, Bei Yu, **Yibo Lin**, Xiaoqing Xu, Wuxi Li and David Z. Pan, “[A Practical Split Manufacturing Framework for Trojan Prevention via Simultaneous Wire Lifting and Cell Insertion](#)”, IEEE/ACM Asia and South Pacific Design Automation Conference (ASPDAC), Jeju, Korea, Jan 22-25, 2018.
- [C14] Che-Lun Hsu, Shaofeng Guo, **Yibo Lin**, Xiaoqing Xu, Meng Li, Runsheng Wang, Ru Huang and David Z Pan, “[Layout-dependent aging mitigation for critical path timing](#)”, IEEE/ACM Asia and South Pacific Design Automation Conference (ASPDAC), Jeju, Korea, Jan 22-25, 2018.
- [C13] **Yibo Lin**, Peter Debacker, Darko Trivkovic, Ryoung-han Kim, Praveen Raghavan and David Z. Pan, “[Patterning Aware Design Optimization of Selective Etching in N5 and Beyond](#)”, IEEE International Conference on Computer Design (ICCD), Boston, MA, Nov 5-8, 2017.
- [C12] **Yibo Lin**, Xiaoqing Xu, Jiaojiao Ou and David Z Pan, “[Machine learning for mask/wafer hotspot detection and mask synthesis](#)”, Photomask Technology, Oct 16, 2017. (**Invited paper**)
- [C11] Wei Ye, **Yibo Lin**, Xiaoqing Xu, Wuxi Li, Yiwei Fu, Yongsheng Sun, Canhui Zhan and David Z. Pan, “[Placement Mitigation Techniques for Power Grid Electromigration](#)”, IEEE International Symposium on Low Power Electronics and Design (ISLPED), Taipei, Jul 24-26, 2017.
- [C10] Xiaoqing Xu, **Yibo Lin**, Vinicius Livramento and David Z. Pan, “[Concurrent Pin Access Optimization for Unidirectional Routing](#)”, ACM/IEEE Design Automation Conference (DAC), Austin, TX, Jun 18-22, 2017.
- [C9] Jiaojiao Ou, Bei Yu, Xiaoqing Xu, Joydeep Mitra, **Yibo Lin** and David Z. Pan, “[DSAR: DSA aware routing with simultaneous DSA guiding pattern and double patterning assignment](#)”, ACM International Symposium on Physical Design (ISPD), Portland, OR, Mar 19-22, 2017.
- [C8] **Yibo Lin**, Bei Yu, Xiaoqing Xu, Jih-Rong Gao, Natarajan Viswanathan, Wen-Hao Liu, Zhuo Li, Charles J Alpert and David Z. Pan, “[MrDP: Multiple-row detailed placement of heterogeneous-](#)

sized cells for advanced nodes”, IEEE/ACM International Conference on Computer-Aided Design (ICCAD), Austin, TX, Nov 7-10, 2016.

- [C7] Yudong Tao, Changhao Yan, **Yibo Lin**, Sheng-Guo Wang, David Z. Pan and Xuan Zeng, “A novel unified dummy fill insertion framework with SQP-based optimization method”, IEEE/ACM International Conference on Computer-Aided Design (ICCAD), Austin, TX, Nov 7-10, 2016.
- [C6] **Yibo Lin**, Bei Yu and David Z. Pan, “Detailed placement in advanced technology nodes: a survey”, IEEE International Conference on Solid-State and Integrated Circuit Technology (ICSICT), Hangzhou, China, Oct 25-28, 2016. (**Invited paper**)
- [C5] **Yibo Lin**, Xiaoqing Xu, Bei Yu, Ross Baldick and David Z. Pan, “Triple/quadruple patterning layout decomposition via novel linear programming and iterative rounding”, Proceedings of SPIE, San Jose, CA, Feb 21-25, 2016. (**Best Student Paper Award**)
- [C4] **Yibo Lin**, Bei Yu, Yi Zou, Zhuo Li, Charles J Alpert and David Z. Pan, “Stitch aware detailed placement for multiple e-beam lithography”, IEEE/ACM Asia and South Pacific Design Automation Conference (ASPDAC), Macau, China, Jan 25-28, 2016.
- [C3] **Yibo Lin**, Bei Yu, Biying Xu and David Z. Pan, “Triple patterning aware detailed placement toward zero cross-row middle-of-line conflict”, IEEE/ACM International Conference on Computer-Aided Design (ICCAD), Austin, TX, Nov 2-6, 2015.
- [C2] **Yibo Lin**, Bei Yu and David Z. Pan, “High performance dummy fill insertion with coupling and uniformity constraints”, ACM/IEEE Design Automation Conference (DAC), San Francisco, CA, Jun 7-11, 2015.
- [C1] David Z. Pan, Lars Liebmann, Bei Yu, Xiaoqing Xu and **Yibo Lin**, “Pushing multiple patterning in sub-10nm: are we ready?”, ACM/IEEE Design Automation Conference (DAC), San Francisco, CA, Jun 7-11, 2015. (**Invited Paper**)

专利

- [P7] **林亦波**, 麦景, “基于多电场模型的时钟驱动 FPGA 芯片全局布局方法”, Chinese Patent, CN202210205894.2, Apr 12, 2022.
- [P6] **林亦波**, 张作栋, 郭资政, 王润声, 黄如, “一种老化及涨落感知的动态时序分析方法”, Chinese Patent, CN202110550648.6, Apr 5, 2022. (submitted)
- [P5] **林亦波**, 张作栋, 郭资政, 王润声, 黄如, “一种基于事件传播的动态时序分析方法”, Chinese Patent, CN202110993095.1, Dec 24, 2021. (submitted)
- [P4] **林亦波**, 郭资政, 黄琮蔚, “一种 GPU 加速计算的集成电路无悲观路径分析方法”, Chinese Patent, CN202111070324.9, Dec 24, 2021. (submitted)
- [P3] 麦景, 郭资政, **林亦波**, “一种集成电路设计中器件密度分布的计算方法”, Chinese Patent, CN202110550648.6, Aug 27, 2021. (submitted)
- [P2] 高笑涵, **林亦波**, 刘鸣杰, 潘志刚, “一种交互式模拟电路版图编辑方法及系统”, Chinese Patent, CN202110174716.3, Jun 18, 2021. (submitted)

[P1] 郭资政, 黄琮蔚, 林亦波, “一种 GPU 加速计算的集成电路静态时序分析方法”, Chinese Patent, CN202011143632.5, Jan 22, 2021.