

WUXI LI

Senior Member of Technical Staff (SMTS) Software Engineer ◊ Vivado Placement Team ◊ AMD

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RESEARCH INTERESTS

Design automation and optimization for VLSI

EXPERIENCE

AMD (Xilinx), San Jose, CA

Jul. 2022 – Present

Senior Member of Technical Staff (SMTS) Software Engineer, Vivado Placement Team

AMD (Xilinx), San Jose, CA

Aug. 2019 – Jun. 2022

Member of Technical Staff (MTS) Software Engineer, Vivado Placement Team

Xilinx, San Jose, CA

May 2018 – Aug. 2018

Software Development Intern, Vivado Placement Team

Cadence Design System, Austin, TX

May 2016 – Dec. 2016

Software Development Intern, Clocking Team

Apple, Austin, TX

Jan. 2015 – Dec. 2015

Hardware Design Intern, SoC Clocking Team

Apple, Cupertino, CA

Sep. 2014 – Dec. 2014

Hardware Design Intern, SoC Methodology Team

ARM, Austin, TX

May 2014 – Aug. 2014

Hardware Design Intern, Memory Team

EDUCATION

University of Texas at Austin, TX

Jan. 2016 – Aug. 2019

Ph.D., Department of Electrical and Computer Engineering

Dissertation: Placement Algorithms for Large-Scale Heterogeneous FPGAs

Advisor: David Z. Pan

(GPA 4.0/4.0)

University of Texas at Austin, TX

Aug. 2013 – Dec. 2015

M.S., Department of Electrical and Computer Engineering

(GPA 4.0/4.0)

Shanghai Jiao Tong University, Shanghai, China

Sep. 2009 – Jul. 2013

B.S. with Highest Honors, Department of Microelectronics

(GPA 90.1/100)

PUBLICATIONS

Journal Articles

- [J9] Licheng Guo, Pongstorn Maidee, Yun Zhou, Chris Lavin, Eddie Hung, **Wuxi Li**, Jason Lau, Weikang Qiao, Yuze Chi, Linghao Song, Yuanlong Xiao, Alireza Kaviani, Zhiru Zhang, Jason Cong, “[RapidStream 2.0: Automated Parallel Implementation of Latency Insensitive FPGA Designs Through Partial Reconfiguration](#)”, ACM Transactions on Reconfigurable Technology and Systems (TRETS), 2023.
- [J8] Yibai Meng, **Wuxi Li**, Yibo Lin, David Z. Pan, “[elfPlace: Electrostatics-based Placement for Large-Scale Heterogeneous FPGAs](#)”, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD), 2021.
- [J7] Yibo Lin, Zixuan Jiang, Jiaqi Gu, **Wuxi Li**, Shounak Dhar, Haoxing Ren, Brucek Khailany, 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), 2020. (**Best Paper Award**)

- [J6] Yibo Lin, **Wuxi Li**, Jiaqi Gu, Haoxing Ren, Brucek Khailany, 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), 2020.
- [J5] **Wuxi Li**, David Z. Pan, “[A New Paradigm for FPGA Placement without Explicit Packing](#)”, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD), 2018.
- [J4] Meng Li, Bei Yu, Yibo Lin, Xiaoqing Xu, **Wuxi Li**, 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), 2018.
- [J3] **Wuxi Li**, Yibo Lin, Meng Li, Shounak Dhar, David Z. Pan, “[UTPlaceF 2.0: A High-Performance Clock-Aware FPGA Placement Engine](#)”, ACM Transactions on Design Automation of Electronic Systems (TODAES), 2018. (**1st-Place Award of ISPD 2017 Contest**)
- [J2] **Wuxi Li**, Shounak Dhar, David Z. Pan, “[UTPlaceF: A Routability-Driven FPGA Placer with Physical and Congestion Aware Packing](#)”, IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD), 2017.
- [J1] **Wuxi Li**, Hang Yuan, Wei Xu, Kunling Geng, Guoxing Wang, “[An Optimization Procedure for Coil Design in a Dual Band Wireless Power and Data Transmission System](#)”, ECS Transactions (ECST), 2013.

Conference Papers

- [C16] **Wuxi Li**, Yuji Kukimoto, Gregory Servel, Ismail Bustany, Mehrdad E. Dehkordi, “Calibration-Based Differentiable Timing Optimization in Non-linear Global Placement”, ACM International Symposium on Physical Design (ISPD), 2024.
- [C15] Hailiang Hu, Donghao Fang, **Wuxi Li**, Bo Yuan, Jiang Hu, “Systolic Array Placement on FPGAs”, IEEE/ACM International Conference on Computer-Aided Design (ICCAD), 2023.
- [C14] Ismail Bustany, Grigor Gasparyan, Amit Gupta, Andrew B. Kahng, Meghraj Kalase, **Wuxi Li**, Bodhisatta Pramanik, “[The 2023 MLCAD FPGA Macro Placement Benchmark Design Suite and Contest Results](#)”, ACM/IEEE Workshop on Machine Learning for CAD (MLCAD), 2023.
- [C13] Zizheng Guo, Zuodong Zhang, Xun Jiang, **Wuxi Li**, Yibo Lin, Runsheng Wang, Ru Huang, “[General-Purpose Gate-Level Simulation with Partition-Agnostic Parallelism](#)”, ACM/IEEE Design Automation Conference (DAC), 2023.
- [C12] Donghao Fang, Boyang Zhang, Hailiang Hu, **Wuxi Li**, Bo Yuan, Jiang Hu, “[Global Placement Exploiting Soft 2D Regularity](#)”, ACM International Symposium on Physical Design (ISPD), 2022.
- [C11] Jiaqi Gu, Zheng Zhao, Chenghao Feng, **Wuxi Li**, Ray T. Chen, David Z. Pan, “[FLOPS: Efficient On-Chip Learning for Optical Neural Networks Through Stochastic Zeroth-Order Optimization](#)”, ACM/IEEE Design Automation Conference (DAC), 2020.
- [C10] Mohamed B. Alawieh, **Wuxi Li**, Yibo Lin, Love Singhal, Mahesh Iyer, David Z. Pan, “[High-Definition Routing Congestion Prediction for Large-Scale FPGAs](#)”, IEEE/ACM Asia and South Pacific Design Automation Conference (ASPDAC), 2020.
- [C9] Mingjie Liu, **Wuxi Li**, Keren Zhu, Biying Xu, Yibo Lin, Linxiao Shen, Xiyuan Tang, Nan Sun, David Z. Pan, “[S3DET: Detecting System Symmetry Constraints for Analog Circuits with Graph Similarity](#)”, IEEE/ACM Asia and South Pacific Design Automation Conference (ASPDAC), 2020.
- [C8] **Wuxi Li**, Yibo Lin, David Z. Pan, “[elfPlace: Electrostatics-based Placement for Large-Scale Heterogeneous FPGAs](#)”, IEEE/ACM International Conference on Computer-Aided Design (ICCAD), 2019. (**Best-in-Track Paper**)
- [C7] Yibo Lin, Shounak Dhar, **Wuxi Li**, Haoxing Ren, Brucek Khailany, David Z. Pan, “[DREAMPlace: Deep Learning Toolkit-Enabled GPU Acceleration for Modern VLSI Placement](#)”, ACM/IEEE Design Automation Conference (DAC), 2019. (**Best Paper Award**)
- [C6] **Wuxi Li**, Stephen Yang, Mehrdad E. Dehkordi, David Z. Pan, “[Simultaneous Placement and Clock Tree Construction for Modern FPGAs](#)”, ACM International Symposium on Field-Programmable Gate Arrays (FPGA), 2019.

- [C5] Meng Li, Bei Yu, Yibo Lin, Xiaoqing Xu, **Wuxi Li**, 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), 2018.
- [C4] **Wuxi Li**, Meng Li, Jiajun Wang, David Z. Pan, “[UTPlaceF 3.0: A Parallelization Framework for Modern FPGA Global Placement](#)”, IEEE/ACM International Conference on Computer-Aided Design (ICCAD), 2017. (**Invited Paper**)
- [C3] Wei Ye, Yibo Lin, Xiaoqing Xu, **Wuxi Li**, Yiwei Fu, Yongsheng Sun, Canhui Zhan, David Z. Pan, “[Placement Mitigation Techniques for Power Grid Electromigration](#)”, IEEE International Symposium on Low Power Electronics and Design (ISLPED), 2017.
- [C2] **Wuxi Li**, Shounak Dhar, David Z. Pan, “[UTPlaceF: A Routability-Driven FPGA Placer with Physical and Congestion Aware Packing](#)”, IEEE/ACM International Conference on Computer-Aided Design (ICCAD), 2016. (**Invited Paper, 1st-Place Award of ISPD 2016 Contest**)
- [C1] Wei Xu, Xiyang Li, **Wuxi Li**, Hang Yuan, Guoxing Wang, “[Live demonstration: An Optimization Software and a Design Case of a Novel Dual Band Wireless Power and Data Transmission System](#)”, IEEE International Symposium on Circuits and Systems (ISCAS), 2014.

PATENT

- [P1] **Wuxi Li**, Mehrdad Eslami Dehkordi, Xiaojian Yang, “[Clock tree routing in programmable logic device](#)”, US Patent 10,860,765.

PROFESSIONAL SERVICE

TPC Member

- ACM/IEEE Design Automation Conference (DAC), 2024.
- IEEE/ACM International Conference on Computer-Aided Design (ICCAD), 2023.
- ACM/IEEE Design Automation Conference (DAC), 2023.
- ACM International Symposium on Physical Design (ISPD), 2023.
- IEEE/ACM Asia and South Pacific Design Automation Conference (ASPDAC), 2023.
- ACM/IEEE Design Automation Conference (DAC), 2022.
- ACM International Symposium on Physical Design (ISPD), 2022.
- IEEE/ACM Asia and South Pacific Design Automation Conference (ASPDAC), 2022.

Session (Co-)Chair

- Session “Learn about advanced placement algorithms for hyperscaler chips!”, DAC, 2022.
- Session “Advances in VLSI Routing”, ASPDAC, 2022.
- Session “Optimization Attacks Routing Challenges”, ICCAD, 2019.

Journal Reviewer

- IEEE Transaction on Computer-Aided Design of Integrated Circuits and Systems (TCAD)
- ACM Transactions on Design Automation of Electronic Systems (TODAES)
- IEEE Transactions on Circuits and Systems II (TCAS-II)
- IEEE Transaction on Very Large Scale Integration Systems (TVLSI)
- Integration, the VLSI Journal (Integration)
- Journal of Parallel and Distributed Computing (JPDC)
- Electronics Letters (ELL)

Conference Reviewer

- ACM/IEEE Design Automation Conference (DAC)

- IEEE/ACM International Conference on Computer-Aided Design (ICCAD)
- IEEE/ACM Asia and South Pacific Design Automation Conference (ASPDAC)
- ACM International Symposium on Physical Design (ISPD)
- ACM/IEEE International Symposium on Low Power Electronics and Design (ISLPED)

AWARDS AND HONORS

Best Paper Award	TCAD	2021
Best Paper Award	DAC	2019
Silver Medal at ACM/SIGDA Student Research Competition	ACM/SIGDA	2018
George J. Heuer, Jr. Ph.D. Endowed Graduate Fellowship Fund	UT Austin	2018
3rd-Place Winner of Intern Showcase Presentation	Xilinx	2018
1st-Place Winner of Clock-Aware FPGA Placement Contest	ISPD	2017
1st-Place Winner of Routability-Driven FPGA Placement Contest	ISPD	2016
Graduation with Highest Honors, College Graduate Excellence Award of Shanghai	SJTU	2013
Excellent Bachelor Dissertation Award (Top 39/3900+)	SJTU	2013