

# YIBO LIN

PhD student ◇ Department of Electrical & Computer Engineering  
University of Texas at Austin, Austin, TX 78712 ◇ University of Texas at Austin  
1600 Wickersham Lane apt 3089, Austin, TX 78741, USA ◇ Phone: +1 512-605-7126  
yibolin@utexas.edu ◇ [www.cerc.utexas.edu/~yibolin](http://www.cerc.utexas.edu/~yibolin)

## RESEARCH INTERESTS

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Design automation and optimization for VLSI

## EDUCATION

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| <b>University of Texas at Austin, TX</b><br>Ph.D., Department of Electrical and Computer Engineering<br>Dissertation: Placement Algorithms for Large-Scale Heterogeneous FPGAs<br>Advisor: David Z. Pan<br>(GPA 4.0/4.0) | <i>Jan. 2016 – Aug. 2019</i> |
| <b>University of Texas at Austin, TX</b><br>M.S., Department of Electrical and Computer Engineering<br>(GPA 4.0/4.0)   | <i>Aug. 2013 – Dec. 2015</i> |
| <b>Shanghai Jiao Tong University, Shanghai, China</b><br>B.S. with Highest Honors, Department of Microelectronics<br>(GPA 90.1/100)  | <i>Sep. 2009 – Jul. 2013</i> |

## EXPERIENCE

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| <b>AMD (Xilinx), San Jose, CA</b><br>Senior Member of Technical Staff (SMTS) Software Engineer, Vivado Placement Team | <i>Jul. 2022 – Present</i>   |
| <b>AMD (Xilinx), San Jose, CA</b><br>Member of Technical Staff (MTS) Software Engineer, Vivado Placement Team         | <i>Aug. 2019 – Jun. 2022</i> |
| <b>Xilinx, San Jose, CA</b><br>Software Development Intern, Vivado Placement Team                                     | <i>May 2018 – Aug. 2018</i>  |
| <b>Cadence Design System, Austin, TX</b><br>Software Development Intern, Clocking Team                                | <i>May 2016 – Dec. 2016</i>  |
| <b>Apple, Austin, TX</b><br>Hardware Design Intern, SoC Clocking Team   | <i>Jan. 2015 – Dec. 2015</i> |
| <b>Apple, Cupertino, CA</b><br>Hardware Design Intern, SoC Methodology Team   | <i>Sep. 2014 – Dec. 2014</i> |
| <b>ARM, Austin, TX</b><br>Hardware Design Intern, Memory Team   | <i>May 2014 – Aug. 2014</i>  |

## PUBLICATIONS

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### 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.

## RELATED COURSES

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|  |                                |
|--|--------------------------------|
| • EE382M: VLSI I   | <i>Prof. Michael Orshansky</i> |
| • EE382N: Computer Architecture                              | <i>Prof. Aater Suleman</i>     |
| • EE382V: Optimization Issues in VLSI CAD                    | <i>Prof. David Pan</i>         |
| • EE382M: VLSI II  | <i>Prof. Jacob Abraham</i>     |
| • EE380L: Engineer Programming Languages                     | <i>Prof. Craig Chase</i>       |
| • EE382V: VLSI Physical Design Automation                    | <i>Prof. David Pan</i>         |
| • EE382N: High-Speed Computer Arithmetic                     | <i>Prof. Earl Swartzlander</i> |
| • EE382M: Verification of Digital Systems                    | <i>Dr. Jayanta Bhadra</i>      |
| • INF385M: Database Management                               | <i>Dr. Stan Gunn</i>           |
| • INF385T: Metadata Generation/Interface for Massive Dataset | <i>Prof. Unmil Karadkar</i>    |
| • EE380N: Optimization in Engineering Systems                | <i>Prof. Ross Baldick</i>      |
| • CS383C: Numerical Analysis: Linear Algebra                 | <i>Prof. George Biros</i>      |

## SKILLS

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### Programming Languages

C/C++, L<sup>A</sup>T<sub>E</sub>X, Perl, Python, Verilog

### Operating Systems

Linux/UNIX

### EDA Tools

Cadence Virtuoso, Synopsys Design Compiler, Synopsys IC Compiler, Synopsys PrimeTime

## AWARDS AND HONORS

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|   |           |      |
|---|-----------|------|
| 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 |

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|---|------|------|
| 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 |