

# FANGZHOU WANG

wfz0755@gmail.com

## RESEARCH INTERESTS

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- Physical Design in VLSI CAD
- SAT with Applications in CAD
- VLSI Routing (Global Routing and Detailed Routing)
- Security Closure in Physical Design

## EDUCATION

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<b>The Chinese University of Hong Kong, NT, Hong Kong</b> Ph.D., Department of Computer Science and Engineering Advisor: Prof. Evangeline F.Y. Young	Aug. 2019 – Aug. 2023
<b>City University of Hong Kong, KLN, Hong Kong</b> B.S., Computer Science (First Class Honours) – GPA 3.94/4.30, RANK 2/91 Advisor: Prof. Hong Xu, Henry Dissertation: “Faster Video Super-Resolution System”	Aug. 2015 – Jul. 2019
<b>Tsinghua University, Beijing, P. R. China</b> Exchange Student, Department of Computer Science and Technology	Sep. 2016 – Jan. 2017

## EXPERIENCE

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<b>Cadence Design Systems, Austin, Texas</b> Lead Software Engineer, NanoRoute Team	Sep. 2023 – Now
<b>Cadence Design Systems, Austin, Texas</b> Software Engineering Intern, NanoRoute Team	Sep. 2022 – Feb. 2023
<b>Huawei Noah’s Ark Lab, NT, Hong Kong</b> Research Intern, Decision Making & Reasoning Lab	Sep. 2021 – Jan. 2022
<b>City University of Hong Kong, KLN, Hong Kong</b> Full-time Research Assistant, Department of Computer Science Topic: Scheduling for distributed DNN training Advisor: Prof. Hong Xu, Henry	Jun. 2018 – Aug. 2018
<b>Hong Kong Exchanges and Clearing Limited, NT, Hong Kong</b> Assistant Analyst Programmer, Cash Satellite Systems Regular Team	Aug. 2017 – May 2018

## RESEARCH AND PROJECT EXPERIENCE

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- Floorplanning
  - Fixed-outline floorplanning with analytical approaches
- Global Routing
  - LEF/DEF-based detailed routability-driven global routing
  - Routing with cell movement for efficient P&R co-optimization
- Detailed Routing
  - Pin access analysis with fast design rule checking and SAT solving
- Security Closure of Physical Layouts
  - Logic locking against machine learning-based attacks
  - Layout-level defense against trojan insertion attacks

- Wafer-Scale Deep Learning Accelerator Placement
  - Placing DNNs on wafer-scale AI accelerator with optimal kernel sizing

## PUBLICATIONS

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### Journal Papers

- [J3] **Fangzhou Wang**, Jinwei Liu, Jinwei Liu, Wing Ho Lau, Haocheng Li, Evangeline F.Y. Young, “Fast-Pass: A Fast Pin Access Analysis Framework for Detailed Routability Enhancement”, accepted by IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (**TCAD**).
- [J2] Bentian Jiang, Jingsong Chen, Jinwei Liu, Lixin Liu, **Fangzhou Wang**, Xiaopeng Zhang, Evangeline F.Y. Young, “CU.POKer: Placing DNNs on WSE with Optimal Kernel Sizing and Efficient Protocol Optimization”, accepted by IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (**TCAD**), Volume: 41, Issue: 6, June 2022.
- [J1] Itai Feigenbaum, Minming Li, Jay Sethuraman, **Fangzhou Wang**, Shaokun Zou, “Strategic facility location problems with linear single-dipped and single-peaked preferences”, Autonomous Agents and Multi-Agent Systems 34, no. 2 (2020): 1-47.

### Conference Papers

- [C10] Tianji Liu, Qijing Wang, Lixin Liu, **Fangzhou Wang**, Evangeline F.Y. Young, “On Advanced Methodologies for Microarchitecture Design Space Exploration”, Great Lakes Symposium on VLSI (**GLSVLSI**), Tampa Bay Area, FL, USA, June 12-14, 2024.
- [C9] Qin Luo, Xinshi Zang, Qijing Wang, **Fangzhou Wang**, Evangeline F.Y. Young, Martin D.F. Wong, “A Routability-Driven Ultrascale FPGA Macro Placer with Complex Design Constraints”, The 32nd IEEE International Symposium on Field-Programmable Custom Computing Machines (**FCCM**), Orlando, FL, USA, May 5-8, 2024.
- [C8] Wei Li, **Fangzhou Wang**, Jose Moura, Shawn Blanton, “Global floorplanning via semidefinite programming”, ACM/IEEE Design Automation Conference (**DAC**), San Francisco, July 9-13, 2023.
- [C7] Shixiong Kai, Chak-Wa Pui, **Fangzhou Wang**, Jiang Shougao, Bin Wang, Yu Huang and Jianye Hao, “TOFU: A Two-Step Floorplan Refinement Framework for Whitespace Reduction”, IEEE/ACM Proceedings Design, Automation and Test in Europe (**DATE**), Antwerp, Belgium, April 17 - 19, 2023.
- [C6] **Fangzhou Wang**, Qijing Wang, Bangqi Fu, Shui Jiang, Xiaopeng Zhang, Lilas Alrahis, Ozgur Sinanoglu, Johann Knechtel, Tsung-Yi Ho, Evangeline F.Y. Young, “Security Closure of IC Layouts Against Hardware Trojans”, ACM International Symposium on Physical Design (**ISPD**), Virtual Event, USA, March 26-29, 2023.
- [C5] **Fangzhou Wang**, Jinwei Liu, Evangeline F.Y. Young, “FastPass: Fast Pin Access Analysis with Incremental SAT Solving”, ACM International Symposium on Physical Design (**ISPD**), Virtual Event, USA, March 26-29, 2023. (**Best Paper Award**)
- [C4] Xinshi Zang, **Fangzhou Wang**, Jinwei Liu, Martin D.F. Wong, “ATLAS: A Two-Level Layer-Aware Scheme for Routing with Cell Movement”, The 41th IEEE/ACM International Conference on Computer-Aided Design (**ICCAD**), San Diego, CA, USA, Oct. 30 - Nov. 3, 2022.
- [C3] **Fangzhou Wang**, Lixin Liu, Jingsong Chen, Jinwei Liu, Xinshi Zang, Martin D.F. Wong, “Starfish: An Efficient P&R Co-Optimization Engine with A\*-based Partial Rerouting”, The 40th IEEE/ACM International Conference on Computer-Aided Design (**ICCAD**), Munich, Germany, Nov. 1-4, 2021.
- [C2] Bentian Jiang, Jingsong Chen, Jinwei Liu, Lixin Liu, **Fangzhou Wang**, Xiaopeng Zhang, Evangeline F.Y. Young, “CU.POKer: Placing DNNs on Wafer-Scale AI Accelerator with Optimal Kernel Sizing”, The 39th IEEE/ACM International Conference on Computer-Aided Design (**ICCAD**), San Diego, CA, USA, Nov. 2-5, 2020.
- [C1] Jinwei Liu, Chak-Wa Pui, **Fangzhou Wang**, Evangeline F.Y. Young, “CUGR: Detailed-Routability-Driven 3D Global Routing with Probabilistic Resource Model”, ACM/IEEE Design Automation Conference (**DAC**), San Francisco, July 19-23, 2020.

## SELECTED AWARDS AND HONORS

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3rd Place Award in MLCAD 2023 FPGA Macro-Placement Contest	MLCAD 2023
HKSAR Government Scholarship Fund – Reaching Out Award	HKSAR 2023
Best Paper Award	ISPD 2023
3rd Place Award in CAD Contest on <a href="#">Advanced Security Closure of Physical Layouts</a>	ISPD 2023
Li Po Chun Charitable Trust Fund Postgraduate Scholarship	CUHK 2023
2nd Place Award in CAD Contest on <a href="#">Microarchitecture Design Space Exploration</a>	ICCAD 2022
3rd Place Award in CAD Contest on <a href="#">Security Closure of Physical Layouts</a> (Leader)	ISPD 2022
The Hong Kong, China – Asia-Pacific Economic Cooperation Scholarship	HKSAR 2021 – 2022
2nd Place Award in CAD Contest on <a href="#">Routing with Cell Movement Advanced</a>	ICCAD 2021
1st Place Award in CAD Contest on <a href="#">Routing with Cell Movement</a> (Leader)	ICCAD 2020
1st Place Award in CAD Contest on <a href="#">Wafer-Scale Deep Learning Accelerator Placement</a>	ISPD 2020
DAC Young Fellow Award	DAC 2020
1st Place Award in CAD Contest on <a href="#">LEF/DEF Based Open-Source Global Router</a>	ICCAD 2019
Full Postgraduate Studentship	CUHK 2019 – 2023
The Department of Computer Science Outstanding Student Scholarship	CityU 2019
The College of Engineering Dean’s Scholarship (no more than 5 granted each year)	CityU 2019
HKSAR Government Scholarship Fund – Talent Development Scholarship	HKSAR 2019 – 2023
Bronze Medal in the ACM-ICPC Asia Regional Contest (Xuzhou)	ACM 2018
Silver Medal in the ACM-ICPC Chinese Collegiate Programming Contest	ACM 2018
CityU Full Tuition Entrance Scholarship	CityU 2015 – 2019
Dean’s List (College of Engineering)	CityU 2015 – 2019

## PROFESSIONAL SERVICE

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### Reviewer / External Reviewer

- IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD)
- ACM Transactions on Design Automation of Electronic Systems (TODAES)
- Integration, the VLSI Journal
- Microelectronics Journal, Elsevier
- Design Automation Conference (DAC)
- International Conference on Computer-Aided Design (ICCAD)
- Design Automation and Test in Europe (DATE)
- International Symposium on Physical Design (ISPD)
- IEEE International Conference on Computer Design (ICCD)
- ACM Great Lakes Symposium on VLSI (GLSVLSI)

## CONFERENCE PRESENTATIONS

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- ACM International Symposium on Physical Design (ISPD) 2023
- IEEE/ACM International Conference on Computer-Aided Design (ICCAD) 2021

## TECHNICAL SKILLS

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<b>Programming</b>	C/C++, Python, Tcl,
<b>Toolkits</b>	PyTorch, Git, L <sup>A</sup> T <sub>E</sub> X, Perforce
<b>Languages</b>	Mandarin (Native), English (Fluent), Cantonese (Fluent), Japanese (Beginner)