TINGHUAN CHEN

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Rm 3906, Technical University of Munich, Arcisstr. 21, 80333 Munich, Germany

RESEARCH INTERESTS

- Machine learning in EDA and analog/mixed-signal VLSI design-for-reliability.

EDUCATION

Chinese University of Hong Kong, Hong Kong *Oct. 2017 – Aug. 2021*
Ph.D., Computer Science & Engineering
Department of Computer Science and Engineering
Advisor: Prof. Bei Yu

Southeast University, Nanjing, China *Sep. 2014 – Sep. 2017*
M.Eng., Circuits & Systems
National ASIC Engineering Technology Research Center
School of Electronics Science & Engineering

Southeast University, Nanjing, China *Sep. 2010 – June 2014*
B.Eng., Electronics Science & Technology
School of Electronics Science & Engineering *Sep. 2011 – June 2014*
School of Computer Science & Engineering *Sep. 2010 – Aug. 2011*

EXPERIENCES

Technical University of Munich, Germany *April 2022 – Now*
Visiting Researcher
Advisor: Prof. Ulf Schlichtmann

Chinese University of Hong Kong, Hong Kong *Sep. 2021 – Now*
Post-doctoral Fellow
Advisor: Prof. Bei Yu

HiSilicon Technologies Co., Shenzhen, China *Nov. 2019 – June 2020*
Research Intern
COT Department

Chinese University of Hong Kong, Hong Kong *Mar. 2017 – May. 2017*
Research Assistant
Department of Computer Science and Engineering
Advisor: Prof. Bei Yu

PUBLICATIONS

(# denotes corresponding author)

Journal Papers

[J1] **Tinghuan Chen**, Qi Sun, Canhui Zhan, Changze Liu, Huatao Yu, Bei Yu, "Deep H-GCN: Fast Analog IC Aging-induced Degradation Estimation", accepted by IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (**TCAD**). (CCF-A)

[J2] **Tinghuan Chen**, Bin Duan, Qi Sun, Meng Zhang, Guoqing Li, Hao Geng, Qianru Zhang, Bei Yu, "An Efficient Sharing Grouped Convolution via Bayesian Learning", accepted by IEEE Transactions on Neural Networks and Learning Systems (**TNNLS**). (IF: 10.451, CCF-B)

[J3] Hao Geng, **Tinghuan Chen**, Yuzhe Ma, Binwu Zhu, Bei Yu, "PTPT: Physical Design Tool Parameter Tuning via Multi-Objective Bayesian Optimization", accepted by IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (**TCAD**). (CCF-A)

[J4] Qi Sun, **Tinghuan Chen**, Siting Liu, Jin Miao, Jianli Chen, Hao Yu, Bei Yu, "Correlated Multi-objective Multi-fidelity Optimization for HLS Directives Design", accepted by ACM Transactions on Design Automation of Electronic Systems (**TODAES**). (CCF-B)

[J5] **Tinghuan Chen**, Bingqing Lin, Hao Geng, Shiyan Hu, Bei Yu, "Leveraging Spatial Correlation for Sensor Drift Calibration in Smart Building", IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (**TCAD**), vol. 40, no. 7, pp. 1273-1286, 2021. (CCF-A)

[J6] Qianru Zhang, Meng Zhang, **Tinghuan Chen**, Zhifei Sun, Yuzhe Ma, Bei Yu, "Recent advances in convolutional neural network acceleration", Neurocomputing, vol. 323, pp. 37-51, 2019.

[J7] Zhifei Sun, **Tinghuan Chen**#, You Tong, Meng Zhang, "Blind Equalization of Constant Modulus Signals Based on Gaussian Process for Classification", Wireless Personal Communications, vol. 97, no. 4, pp. 6005-6018, 2017.

[J8] Chen Zhu, Huatao Zhao, **Tinghuan Chen**, Tianbo Zhu, "A low latency and high efficient three- dimension Network-on-Chip based on hierarchical structure", Modern Physics Letters B, vol. 31, no. 19-21, 1740061, 2017.

[J9] **Tinghuan Chen**, Meng Zhang, Jianhui Wu, Chau Yuen, You Tong, "Image Encryption and Compression based on Kronecker Compressed Sensing and Elementary Automata Scrambling", Optics & Laser Technology, vol. 84, pp. 118-133, 2016.

[J10] Meng Zhang, **Tinghuan Chen**#, Xuchao Shi, Peng Cao, "Image Arbitrary Ratio Down- and Up-Sampling Scheme Exploiting DCT Low Frequency Components and Sparsity in High Frequency Components", IEICE Transactions on Information and Systems, vol. E99-D, no. 2, pp. 475- 487, 2016.

Conference Papers

[C1] Zheng Zhang, **Tinghuan Chen**#, Jiaxin Huang, Meng Zhang, "A Fast Parameter Tuning Framework via Transfer Learning and Multi-objective Bayesian Optimization", ACM/IEEE Design Automation Conference (**DAC**), San Francisco, CA, Jul. 10–14, 2022. (CCF-A)

[C2] Hao Geng, **Tinghuan Chen**, Qi Sun, Bei Yu, "Techniques for CAD Tool Parameter Auto-tuning in Physical Synthesis: A Survey", IEEE/ACM Asia and South Pacific Design Automation Conference (**ASPDAC**), Taipei, Jan. 17–20, 2022. (**Invited Paper**)

[C3] **Tinghuan Chen**, Qi Sun, Canhui Zhan, Changze Liu, Huatao Yu, Bei Yu, "Analog IC Aging-induced Degradation Estimation via Heterogeneous Graph Convolutional Networks", IEEE/ACM Asia and South Pacific Design Automation Conference (**ASPDAC**), Tokyo, Jan. 18–21, 2021.

[C4] **Tinghuan Chen**, Qi Sun, Bei Yu, "Machine Learning in Nanometer AMS Design for Reliability", IEEE International Conference on ASIC (ASICON), Kunming, Oct. 26–29, 2021. (**Invited Paper**)

[C5] Qi Sun, Chen Bai, **Tinghuan Chen**, Hao Geng, Xinyun Zhang, Yang Bai, Bei Yu, "Fast and Efficient DNN Deployment via Deep Gaussian Transfer Learning", IEEE International Conference on Computer Vision (**ICCV**), Oct. 11–17, 2021. (CCF-A)

[C6] Qi Sun, **Tinghuan Chen**, Siting Liu, Jin Miao, Jianli Chen, Hao Yu, Bei Yu, "Correlated Multi-objective Multi-fidelity Optimization for HLS Directives Design", IEEE/ACM Proceedings Design, Automation and Test in Europe (**DATE**), Grenoble, Feb. 1–5, 2021. (Best Paper Award Nomination) (CCF-B)

[C7] **Tinghuan Chen**, Bingqing Lin, Hao Geng, Bei Yu, "Sensor Drift Calibration via Spatial Correlation Model in Smart Building", ACM/IEEE Design Automation Conference (**DAC**), Las Vegas, NV, June 2-6, 2019. (CCF-A)

[C8] Qi Sun, **Tinghuan Chen**, Jin Miao, Bei Yu, "Power-Driven DNN Dataflow Optimization on FPGA", IEEE/ACM International Conference on Computer-Aided Design (**ICCAD**), Westminster, CO, Nov. 4–7, 2019. (**Invited Paper**) (CCF-B)

[C9] Qianru Zhang, Meng Zhang, **Tinghuan Chen**, Jinan Fan, Zhou Yang, Guoqing Li, "Electricity Theft Detection Using Generative Models", IEEE International Conference on Tools with Artificial Intelligence (ICTAI), Volos, Nov. 5-7, 2018.

[C10] **Tinghuan Chen**, Zhifang Dong, "A New Method for the 3-D Discrete Hartley Transform", IEEE International Conference on Instrumentation & Measurement, Computer, Communication and Control, Harbin, Dec. 8-10, 2012.

Book Chapters

[B1] **Tinghuan Chen**, Bingqing Lin, Hao Geng, Bei Yu, "Smart Building Sensor Drift Calibration", Big Data Analytics for Cyber-Physical Systems, Springer, 2020: 187-202.

Newsletters

[N1] **Tinghuan Chen**, "Bayesian Sharing Grouped Convolution", IEEE TCCPS Newsletter, Volume 07, Issue 02, Nov. 2021.

[N2] Qi Sun, **Tinghuan Chen**, Jin Miao, Bei Yu, "Power-Driven DNN Dataflow Optimization on FPGA", IEEE TCCPS Newsletter, Volume 05, Issue 01, Mar. 2020.

SELECTED PATENTS

[P1] Meng Zhang, Jingchuan Zhong, Hui Guo, **Tinghuan Chen**, Ziyang Chen, Jun Liu, "Reconfigurable modulation and demodulation method used in baseband processing", PCT/CN2016/073139.

[P2] Meng Zhang, **Tinghuan Chen**, Zhifei Sun, "Down-sampling method, up-sampling method, and transmission processing method of video frames", PCT/CN2016/073415.

SELECTED AWARDS

IEEE/ACM DATE Best Paper Award Nomination	2021
Chinese University of Hong Kong Postgraduate Scholarship	2017
Postgraduate National Scholarship of China	2016
Nan Rui Electric Scholarship	2016
Southeast University Outstanding Thesis (6/187)	2014
National Endeavor Scholarship	2012

PROFESSIONAL SERVICE

Program Committee Member

- International Joint Conference on Artificial Intelligence (IJCAI): 2022, 2021

Conference Reviewer

- ACM/IEEE Workshop on Machine Learning for CAD (MLCAD): 2020
- ACM/IEEE Design Automation Conference (DAC): 2020, 2019
- ACM International Symposium on Physical Design (ISPD): 2019
- ACM Great Lakes Symposium on VLSI (GLSVLSI): 2018

Selected Journal Reviewer

- ACM Transactions on Design Automation of Electronic Systems (TODAES)
- IEEE Design & Test
- Integration, the VLSI Journal
- IET Electronics Letters
- Neurocomputing
- IEEE Systems Journal
- Journal of Systems Architecture
- IET Cyber-Physical Systems: Theory & Applications

TEACHING ASSISTANT

Spring 2020	CENG3430 Rapid Prototyping of Digital Systems
Fall 2019	CENG4480 Embedded System Development and Applications
Spring 2019	CENG3430 Rapid Prototyping of Digital Systems
Spring 2018	CENG3420 Computer Organization and Design