

Tinghuan Chen

Ph.D.

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Research Interest

Machine learning in EDA, design space exploration, analog/mixed-signal VLSI design-for-reliability.

Experience

- **AI Chip Center for Emerging Smart Systems Limited (ACCESS)** Hong Kong
Sep., 2021 – now
 - Post-doctoral Fellow

Education

- **Chinese University of Hong Kong** Hong Kong
Oct., 2017 – Aug., 2021
 - Ph.D. in Computer Science and Engineering
 - Department of Computer Science and Engineering
- **Southeast University** Nanjing, China
Sep., 2014 – Sep., 2017
 - M.Eng. in Circuits & Systems
 - National ASIC Engineering Technology Research Center
 - School of Electronics Science & Engineering
- **Southeast University** Nanjing, China
Sep., 2010 – June, 2014
 - B.Eng. in Electronics Science & Technology
 - School of Electronics Science & Engineering 2011 – 2014
 - Computer Science & Technology
 - School of Computer Science & Engineering 2010 – 2011

Publications

Journal papers (* corresponding author)

- (1) **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)
- (2) **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)

- (3) **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)
- (4) Qianru Zhang, Meng Zhang, **Tinghuan Chen**, Zhifei Sun, Yuzhe Ma and Bei Yu, “Recent advances in convolutional neural network acceleration”, **Neurocomputing**, vol. 323, pp. 37-51, 2019.
- (5) Zhifei Sun, **Tinghuan Chen***, You Tong and 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.
- (6) Chen Zhu, Huatao Zhao, **Tinghuan Chen** and 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.
- (7) **Tinghuan Chen**, Meng Zhang, Jianhui Wu, Chau Yuen and You Tong, “Image Encryption and Compression based on Kronecker Compressed Sensing and Elementary Automata Scrambling”, **Optics & Laser Technology**, vol. 84, pp. 118-133, 2016.
- (8) Meng Zhang, **Tinghuan Chen***, Xuchao Shi and 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

- (1) **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.
- (2) **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)
- (3) 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)
- (4) 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)
- (5) **Tinghuan Chen**, Bingqing Lin, Hao Geng and 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)
- (6) 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)
- (7) Qianru Zhang, Meng Zhang, **Tinghuan Chen**, Jinan Fan, Zhou Yang and Guoqing Li, “Electricity Theft Detection Using Generative Models”, **IEEE International Conference on Tools with Artificial Intelligence (ICTAI)**, Volos, Nov. 5-7, 2018.

- (8) **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

- (1) **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

- (1) **Tinghuan Chen**, “Bayesian Sharing Grouped Convolution”, **IEEE TCCPS Newsletter**, Volume 07, Issue 02, Nov. 2021.
- (2) 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

- (1) Meng Zhang, Jingchuan Zhong, Hui Guo, **Tinghuan Chen**, Ziyang Chen, Jun Liu, “Reconfigurable modulation and demodulation method used in baseband processing”, PCT/CN2016/073139.
- (2) Meng Zhang, **Tinghuan Chen**, Zhifei Sun, “Down-sampling method, up-sampling method, and transmission processing method of video frames”, PCT/CN2016/073415.

Selected Awards

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

Intern

- | | |
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| • Research Intern | Hisilicon Technologies Co.
<i>Nov. 2019-June. 2020</i> |
| – COT Department, Shenzhen | |
| – Instructor: Canhui Zhan | |
| • Research Assistant | Chinese University of Hong Kong
<i>Mar. 2017-May. 2017</i> |
| – Department of Computer Science and Engineering | |

Professional Service

Program Committee Member

- International Joint Conference on Artificial Intelligence (IJCAI): 2021 (Demonstrations Track)

Conference Review

- 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 Review

- IEEE Design & Test
- Integration, the VLSI Journal
- IET Electronics Letters
- Neurocomputing
- IEEE Systems Journal
- China Communications
- IET Cyber-Physical Systems: Theory & Applications

Teaching Experience

- **Rapid Prototyping of Digital Systems** Chinese University of Hong Kong
Spring 2020
 - Teaching Assistant
 - Instructor: Ming-Chang YANG
- **Embedded System Development and Applications** Chinese University of Hong Kong
Fall 2019
 - Teaching Assistant
 - Instructor: Bei Yu
- **Rapid Prototyping of Digital Systems** Chinese University of Hong Kong
Spring 2019
 - Teaching Assistant
 - Instructor: Ming-Chang YANG
- **Computer Organization and Design** Chinese University of Hong Kong
Spring 2018
 - Teaching Assistant
 - Instructor: Bei Yu