

# Tinghuan Chen

Ph.D student

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## Research Interest

Machine Learning in Analog/Mixed-Signal VLSI Design-for-Reliability, Design Space Exploration and Cyber-Physical Systems.

## Education

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

## Publications

### Journal papers

- (1) **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)
- (2) **Tinghuan Chen**, Bingqing Lin, Hao Geng, Shiyang 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)
- (3) 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.

- (4) 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.
- (5) 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.
- (6) **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.
- (7) 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 Awards

- 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

## Intern

- **Research Intern** Hisilicon Technologies Co.  
*Nov. 2019-June. 2020*
  - COT Department, Shenzhen
  - Instructor: Canhui Zhan
- **Research Assistant** Chinese University of Hong Kong  
*Mar. 2017-May. 2017*
  - Department of Computer Science and Engineering
  - Instructor: Bei Yu

## 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

## Professional Skill

- **Hardware:** Verilog HDL, VHDL, High-level Synthesis.
- **Software:** TensorFlow1.x, TensorFlow2.x, Pytorch, MATLAB, C++, Python, C, Tcl.