Tinghuan Chen

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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)**.

(2) **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.

(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, **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)

(4) 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)

(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.

(6) 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.

(7) **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.

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.

Awards

- **Chinese University of Hong Kong Postgraduate Scholarship** Aug. 2017
- **Postgraduate National Scholarship of China** Nov. 2016
- **Nan Rui Electric Scholarship** Jun. 2016
- **Master Student First Class Academic Scholarship** Nov. 2014
- **Southeast University Outstanding Thesis** (6/187) Jun. 2014
- **Honorable Mention of Mathematical Contest in Modeling** May. 2013
- **National Students Innovative Training Program** (Grade: Outstanding) Oct. 2013
- **National Endeavor Scholarship** Nov. 2012

Intern

- **Research Assistant** Duke Kunshan University
  July. 2017-Sep.2017
  - Instructor: Xin Li
- **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

Journal Review

- IEEE Design & Test
- Integration, the VLSI Journal
- IET Electronics Letters
- Neurocomputing
- IEEE Systems Journal
- IEEE Access
- China Communications
- IET Cyber-Physical Systems: Theory & Applications
- KSII Transactions on Internet and Information Systems
- Artificial Intelligence In Medicine

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.