

Yu Wang

Associate Professor
Department of Electronic Engineering, Tsinghua University
Room 4-303, Rohm Building, Tsinghua University, Beijing, China
86-10-62772966
yu-wang@mail.tsinghua.edu.cn
<http://nicsefc.ee.tsinghua.edu.cn>

Education

- 2002 - 2007 **Tsinghua University** Beijing, China
Ph.D. (with honors) in Department of Electronic Engineering
Thesis: *Optimization for the Leakage Current and Reliability in Digital Integrated Circuits*
Advisor: Prof. Huazhong Yang, Co-advised by Prof. Yuan Xie
- 1998 - 2002 **Tsinghua University** Beijing, China
B.S. in Electronic Engineering

Professional Experience

- 2011.12-now **Tsinghua University** Beijing, China
Associate Professor in the Department of Electronic Engineering
- 2011 - 2014 **Tsinghua University** Beijing, China
Head of Research Institute of Circuits and Systems
- 2013.07-now **Tsinghua University** Beijing, China
Vice Chair, Department of Electronic Engineering
- 2011 - 2013 **Imperial College** London, UK
Visiting Scholar (4 months in total), with Prof. Wayne Luk
- 2007 - 2011 **Tsinghua University** Beijing, China
Assistant Professor in the Department of Electronic Engineering
- 2008 - 2009 **Hong Kong University of Science and Technology** Hong Kong, China
Visiting Scholar (3 months in total), with Prof. Jiang Xu
- 2007 **Microsoft Research Asia** Beijing, China
Visiting Student/Scholar (6 months in total)

Research Summary

Yu Wang has published more than 30 journals (20 IEEE/ACM journals) and more than 100 conference papers (7 DAC, 7 DATE, 3 ICCAD, 19 ASPDAC, 4 FPGA) in the areas of *EDA*, *FPGA*, *VLSI Design*, and *Embedded Systems*, with a focus on brain inspired computing, application specific heterogeneous computing, parallel circuit analysis, and power and reliability aware system design methodology. He has graduated 3 Ph.D. students and 5 Master Students. He is currently advising 6 doctoral students and 8 master Students. He has served as PI/Co-PI on over 20 research grants administrated by China government agencies (including NSFC, National Key Technology Program, 863, and etc) and 13 research grants from industry (including Microsoft, IBM, Huawei, MHI and etc), with total amount of 29.6 million RMB and personal share of 13.5 million RMB. These projects lead to new CAD tools and optimization methods, interesting heterogenous computing systems based on CPU/FPGA/GPU/emerging memory technology. He has received Best Paper Award in ISVLSI 2012 and Best Poster Award in HEART 2012 with 6 Best Paper Nominations (ASPDAC 2014, ASPDAC 2012, 2 in ASPDAC 2010, ISLPED 2009, CODES 2009). He is a recipient of IBM X10 Faculty Award in 2010 (one of 30 worldwide).

Service Summary

Yu Wang has been an active volunteer in the design automation, VLSI, and FPGA conferences. He served as TPC chair for ICFPT 2011 and Finance Chair of ISLPED 2012-2016, and served as program committee member for leading conferences in these areas, including top EDA conferences such as DAC, DATE, ICCAD, ASP-DAC, and top FPGA conferences such as FPGA and FPT. Currently he serves as Associate Editor for IEEE Transactions on CAD and Journal of Circuits, Systems, and Computers. He also serves as guest editor for Integration, the VLSI Journal and IEEE Transactions on Multi-Scale Computing Systems. He has given 23 invited talks in industry/academia. He is an IEEE Senior Member.

Awards and Honors

- 2015 **Champion**, Low Power Image Recognition Challenge (LPIRC) at Design Automation Conference (DAC) 2015. (Paper [C14])
- 2014 **Best Paper Candidate**, Asia and South Pacific Design Automation Conference (ASPDAC). (Paper [C33])
- 2012 **Best Paper Award**, IEEE Computer Society Annual Symposium on VLSI (ISVLSI). (Paper [C50])
- 2012 **Best Poster Award**, International Symposium on Highly Efficient Accelerators and Reconfigurable Technologies (HEART).
- 2012 **Best Paper Candidate**, Asia and South Pacific Design Automation Conference (ASPDAC).(Paper [C60])
- 2011 **Exchange Award**, Research Exchanges with China and India, Royal Academy of Engineering, UK.
- 2010 **IBM X10 Innovation Faculty Award**
- 2010 **Excellent Student Research Training (SRT) Program Instructor**, Tsinghua University.
- 2010 **Second Prize** of AMD GPU (Graphics Processing Unit) Competition, China.
- 2010 **Best Paper Candidates** x 2, Asia and South Pacific Design Automation Conference(ASPDAC).(Paper [C85][C87])
- 2009 **Best Paper Candidate**, International Symposium on Low Power Electronics and Design(ISLPED) (Paper [C90])
- 2009 **Best Paper Candidate**, IEEE/ACM International Conference on Hardware/Software-Coesign and System Synthesis (CODES+ISSS)(Paper [C103])
- 2009 **First Prize** of AMD GPU Competition, China.
- 2009 **Excellent Student Research Training (SRT) Program Instructor**, Tsinghua University.
- 2007 **Excellent PhD Dissertation**, Tsinghua University.

Selected Student Awards

- 2015 **Boxun Li**, Excellent Research Award @ Student Research Forum ASPDAC 2015
- 2015 **Wenqiang Wang**, Excellent graduate of Beijing
- 2015 **Wenqiang Wang**, Excellent Master thesis award of Tsinghua University
- 2014 **Wulong Liu**, National Scholarship, awarded by MOE of China
- 2014 **Xiaoming Chen**, Excellent graduate of Beijing
- 2014 **Xiaoming Chen**, Excellent PhD thesis award of Tsinghua University
- 2013 **Song Yao**, Gold Medal in ACM Student Research Competition @ ICCAD
- 2013 **Xiaoming Chen**, National Scholarship, awarded by MOE of China
- 2012 **Xiaoming Chen**, Young Scholarship Award for Distinguished Doctoral Candidates, awarded by MOE of China
- 2012 **Yi Shan**, IBM PhD Fellowship Award, among 84 around the world
- 2007-now 7 students won the Excellent Undergraduate Thesis Award of Tsinghua University

Teaching

- 2014 - now *Modern Computer Architecture*, Undergraduate Students
- 2009 - now *Computer Aided Design for Digital Integrated Circuits*, Postgraduate Students
- 2009 - now *C/UNIX Programming*, Postgraduate Students

Selected National Projects

Note: Personal Share is listed at the end of each item.

- 2014.10-2016.06 **Minster of Education, China:** *Research on Brain Inspired Computing Systems*. PI: Luping Shi, Yu Wang, RMB 500,000.
- 2014.01-2016.12 **Minster of Education, China:** *Key technologies in Brain Like Neuron Computing Systems*. PI: Weibei Dou, Yu Wang, RMB 300,000.
- 2014.01-2017.12 **Natural Science Foundation of China:** *Research on Power Efficient Heterogeneous Hardware Computing System for Video Data Analytics*. PI: Yu Wang, RMB 770,000.
- 2013.06-2014.12 **National Key Technology Program:** *Research on LTE-Advanced Soft-Baseband Processing System*. PI: Yu Wang, RMB 397,500

- 2013.01-2016.12 **Natural Science Foundation of China:** *Cross-layer Analysis and Optimization for the Lifetime Reliability of MPSoCs.* PI: Huazhong Yang, Qiang Xu, Yu Wang, RMB 450,000
- 2011.01-2013.12 **National Key Technology Program:** *Research on Generic Technology for New IMT-Advanced Baseband Processing System.* PI: Yu Wang, RMB 1,186,800
- 2011.01-2013.12 **National Key Technology Program:** *Development and Application of EDA tools.* PI: Yu Wang, RMB 500,000
- 2011.01-2013.12 **Natural Science Foundation of China:** *Research on Circuits and Architecture for 3D MPSOC.* PI: Yuan Xie, Huazhong Yang, Yu Wang, RMB 150,000
- 2010.01-2011.12 **Nation Key Technology Program:** *Low Power Clock Tree Synthesis for Embedded CPU.* PIs: Huazhong Yang, Yu Wang, RMB 900,000
- 2008.10-2010.12 **National Key Technology Program:** *Advanced EDA platform development.* PIs: Huazhong Yang, Yu Wang, RMB 2,600,000
- 2009.01-2011.12 **Natural Science Foundation of China:** *Research on FPGA based Anti-Degradation Machine Learning.* PI: Yu Wang, RMB 290,000
- 2009.01-2010.12 **National 863 program:** *Low power Heterogeneous MPSoC based on Sensor Network on Chip.* PI: Yongpan Liu, Yu Wang, RMB 190,000

Industry Projects

Note: Personal Share is listed at the end of each item.

- 2015.09-2017.09 **Huawei:** *Design Exploration on Database Processor.* PI: Yu Wang, RMB 390,000
- 2015.09-2016.09 **Huawei:** *Research on Algorithms for Low Power Smart Hardware.* PI: Yu Wang, RMB 640,000
- 2015.02-2016.02 **Microsoft:** *A-Eye — a smart camera with real-time CNN.* PI: Yu Wang, RMB 100,000
- 2014.12-2015.12 **Unisound:** *Research on Multi-GPU training for DNN systems.* PI: Yu Wang, RMB 400,000
- 2014.09-2015.09 **Huawei:** *Research on Basic operations in Hardware Database System.* PIs: Yu Wang, Guoliang Li, RMB 600,000
- 2014.03-2016.03 **Huawei:** *Research on Hardware Acceleration for Database and Cloud System.* PIs: Yu Wang, RMB 400,000
- 2013.04-2014.04 **Microsoft:** *Heterogeneous Hardware Computing for Deep Neural Network.* PI: Yu Wang, RMB 140,000
- 2010.01-2012.05 **Mitsubishi Heavy Industries (MHI):** *Development of a real-time image processing hardware prototype system.* PI: Yu Wang, RMB 900,000
- 2011.12-2013.12 **IBM:** *Smart IOT Database Appliance on Hybrid System.* PI: Yu Wang, RMB 100,000
- 2010.09-2011.08 **IBM:** *Low-Latency/High-Efficiency Programming Model for Pub/Sub Application on a Heterogeneous Multi-core Platform.* PI: Yu Wang, RMB 100,000
- 2010.04-2011.04 **Microsoft:** *Heterogeneous Hardware Computing for Brain Network Research on Alzheimer Disease.* PI: Yu Wang, RMB 200,000
- 2009.04-2010.04 **AMD China University Research Program:** *GPU-based Acceleration for Machine Learning Algorithms.* PI: Yu Wang, RMB 110,000
- 2008.04-2009.04 **Microsoft:** *General FPGA-based Acceleration for Machine Learning.* PI: Yu Wang, RMB 80,000

Journal Publications

- [J1] Xiaoming Chen, Ling Ren, **Yu Wang**, Huazhong Yang, “GPU-Accelerated Sparse LU Factorization for Circuit Simulation with Performance Modeling”, in *IEEE Transactions on Parallel and Distributed Systems (TPDS)*, vol.26, No.3,

2015, pp.786-795.

- [J2] **Yu Wang**, Song Yao, Shuai Tao, Xiaoming Chen, Yuchun Ma, Yiyu Shi, Huazhong Yang, “HS3DPG: Hierarchical Simulation for 3D P/G Network”, to appear in *IEEE Transactions on Very Large Scale Integration Systems (TVLSI)*, 2015.
- [J3] Wulong Liu, **Yu Wang**, Guoqing Chen, Yuchun Ma, Yuan Xie, Huazhong Yang, “Whitespace-Aware TSV Arrangement in 3-D Clock Tree Synthesis”, to appear in *IEEE Transactions on Very Large Scale Integration Systems (TVLSI)*, 2015.
- [J4] Wenqiang Wang, Jing Yan, Ningyi Xu, **Yu Wang**, Feng-Hsiung Hsu, “Real-time High-quality Stereo Vision System in FPGA”, to appear in *IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)*, 2015.
- [J5] Boxun Li, Peng Gu, Yi Shan, **Yu Wang**, Yiran Chen, Huazhong Yang, “RRAM-based Analog Approximate Computing”, to appear in *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD)*, 2015.
- [J6] Haixiao Du, Xuhong Liao, Mingrui Xia, Qixiang Lin, Gushu Li, Yuze Chi, Huazhong Yang, **Yu Wang**, Yong He, “Test-Retest Reliability of Graph Metrics in High-Resolution Functional Connectomics: A Resting-State Functional MRI Study”, in *CNS Neuroscience & Therapeutics*, vol.21, No.10, 2015, pp.802-816.
- [J7] Boxun Li, Peng Gu, **Yu Wang**, Huazhong Yang, “Exploring the Precision Limitation for RRAM-based Analog Approximate Computing”, to appear in *IEEE Design & Test (D&T)*, 2015.
- [J8] Wujie Wen, Yaojun Zhang, Yiran Chen, **Yu Wang**, Yuan Xie, “PS3-RAM: A Fast Portable and Scalable Statistical STT-RAM Reliability/Energy Analysis Method”, in *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD)*, vol.33, No.11, 2014, pp.1644-1656.
- [J9] Wulong Liu, **Yu Wang**, Yuchun Ma, Yuan Xie, Huazhong Yang, “On-chip hybrid power supply system for wireless sensor nodes”, in *ACM Journal on Emerging Technologies in Computing Systems (JETC)*, vol.10, No.3, 2014, pp.23.
- [J10] Wulong Liu, Yu Wang, **Yu Wang**, Xue Feng, Yuan Xie, Yidong Huang, Huazhong Yang, “Exploration of Electrical and Novel Optical Chip-to-Chip Interconnects”, in *IEEE Design & Test*, vol.31, No.5, 2014, pp.28-35.
- [J11] Hong Zhang, Xue Feng, Boxun Li, **Yu Wang**, Kaiyu Cui, Fang Liu, Weibei Dou, and Yidong Huang, “Integrated photonic reservoir computing based on hierarchical time-multiplexing structure”, in *Optical Express*, vol.22, No.25, 2014, pp.31356-31370.
- [J12] Yi Shan, Yuchen Hao, Wenqiang Wang, **Yu Wang**, Xu Chen, Huazhong Yang, Wayne Luk, “Hardware Acceleration for an Accurate Stereo Vision System Using Mini-Census Adaptive Support Region”, in *ACM Transactions on Embedded Computing Systems (TECS)*, vol.13, No.4s, 2014, pp.132:1–132:24.
- [J13] Xiaoming Chen, **Yu Wang**, Huazhong Yang, “NICSLU: An Adaptive Sparse Matrix Solver for Parallel Circuit Simulation.”, in *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD)*, vol.32, No.2, 2013, pp.261-274.
- [J14] Xiaoming Chen, **Yu Wang**, Huazhong Yang, Yuan Xie, Yu Cao, “Assessment of Circuit Optimization Techniques Under NBTI.”, in *IEEE Design & Test (D&T)*, vol.30, No.6, 2013, pp.40-49.
- [J15] Weichen Liu, **Yu Wang**, Xuan Wang, Jiang Xu, Huazhong Yang, “On-Chip Sensor Network for Efficient Management of Power Gating-Induced Power/Ground Noise in Multiprocessor System on Chip”, in *IEEE Transactions on Parallel and Distributed Systems (TPDS)*, vol.24, No.4, 2013, pp.767-777.
- [J16] Xiaoming Chen, Hong Luo, **Yu Wang**, Yu Cao, Yuan Xie, Yuchun Ma, Huazhong Yang, “Evaluation and mitigation of performance degradation under random telegraph noise for digital circuits”, in *IET Circuits, Devices & Systems*, vol.7, No.5, 2013, pp.273-282.
- [J17] Ruining He, Guoqiang Liang, Yuchun Ma, **Yu Wang**, Jinian Bian, “Unification of PR Region floorplanning and Fine-Grained Placement for Dynamic Partially Reconfigurable FPGAs”, in *Journal of Circuits, Systems, and Computers (JCSC)*, vol.22, No.04, 2013, pp.1350020.
- [J18] **Yu Wang**, Haixiao Du, Mingrui Xia, Ling Ren, Mo Xu, Teng Xie, Gaolang Gong, Ningyi Xu, Huazhong Yang, Yong He, “A Hybrid CPU-GPU Accelerated Framework for Fast Mapping of High-Resolution Human Brain Connectome”, in *PLoS one*, vol.8, No.9, 2013, pp.e62789.
- [J19] Xiaoming Chen, **Yu Wang**, Yu Cao, Yuchun Ma, Huazhong Yang, “Variation-aware supply voltage assignment for simultaneous power and aging optimization”, in *IEEE Transactions on Very Large Scale Integration Systems (TVLSI)*, vol.20, No.11, 2012, pp.2143-2147.
- [J20] Yibo Chen, **Yu Wang**, Yuan Xie, Andres Takach, “Parametric yield-driven resource binding in high-level synthesis with multi-V_{th}/V_{dd} library and device sizing”, in *Journal of Electrical and Computer Engineering (JECE)*, vol.2012, No.3, 2012, pp.3.

- [J21] Xiaoming Chen, Wei Wu, **Yu Wang**, Hao Yu, Huazhong Yang, “An escheduler-based data dependence analysis and task scheduling for parallel circuit simulation”, in *Circuits and Systems II: Express Briefs, IEEE Transactions on (TCASII)*, vol.58, No.10, 2011, pp.702-706.
- [J22] Sheng-Qing Shi, Kai Chen, **Yu Wang**, Rong Luo, “Node importance analysis in complex networks based on hardware computing”, in *Dianzi Yu Xinxi Xuebao (Journal of Electronics and Information Technology)*, vol.33, No.10, 2011, pp.2536-2540.
- [J23] **Yu Wang**, Jiang Xu, Yan Xu, Weichen Liu, Huazhong Yang, “Power gating aware task scheduling in mpsoc”, in *Very Large Scale Integration Systems, IEEE Transactions on (TVLSI)*, vol.19, No.10, 2011, pp.1801-1812.
- [J24] **Yu Wang**, Xiaoming Chen, Wenping Wang, Yu Cao, Yuan Xie, Huazhong Yang, “Leakage power and circuit aging cooptimization by gate replacement techniques”, in *Very Large Scale Integration Systems, IEEE Transactions on (TVLSI)*, vol.19, No.4, 2011, pp.615-628.
- [J25] **Yu Wang**, Hong Luo, Ku He, Rong Luo, Huazhong Yang, Yuan Xie, “Temperature-aware NBTI modeling and the impact of standby leakage reduction techniques on circuit performance degradation”, in *Dependable and secure computing, IEEE transactions on (TDSC)*, vol.8, No.5, 2011, pp.756-769.
- [J26] Jing Yan, Ning-YI Xu, Xiong-FEI Cai, Rui Gao, **Yu Wang**, Rong Luo, Feng-HSIUNG Hsu, “An FPGA-based accelerator for LambdaRank in Web search engines”, in *ACM Transactions on Reconfigurable Technology and Systems (TRETS)*, vol.4, No.3, 2011, pp.25:1-25:19.
- [J27] Kan Wang, Sheqin Dong, Yuchun Ma, **Yu Wang**, Xianlong Hong, Jason Cong, “Leakage-Aware TSV-Planning with Power-Temperature-Delay Dependence in 3D ICs”, in *IEICE TRANSACTIONS on Fundamentals of Electronics, Communications and Computer Sciences (IEICE)*, vol.94, No.12, 2011, pp.2490-2498.
- [J28] Qian Ding, **Yu Wang**, Rong Luo, Hui Wang, Huazhong Yang, “Soft error generation analysis in combinational logic circuits”, in *Journal of Semiconductors*, vol.31, No.9, 2010, pp.095015.
- [J29] Guangming Yu, **Yu Wang**, Huazhong Yang, Hui Wang, “Fast-locking all-digital phase-locked loop with digitally controlled oscillator tuning word estimating and presetting”, in *IET Circuits, Devices & Systems*, vol.4, No.3, 2010, pp.207-217.
- [J30] Qian Ding, **Yu Wang**, Hui Wang, Rong Luo, Huazhong Yang, “SERSim: a soft error rate simulator and a case study for a 32-bit OpenRisc 1200 microprocessor”, in *International Journal of Electronics*, vol.97, No.4, 2010, pp.441-455.
- [J31] Qian Ding, **Yu Wang**, Hui Wang, Rong Luo, Huazhong Yang, “Output remapping technique for critical paths soft-error rate reduction”, in *IET Computers & Digital Techniques*, vol.4, No.4, 2010, pp.325-333.
- [J32] Yuchun Ma, Xin Li, **Yu Wang**, Xianlong Hong, “Thermal-aware incremental floorplanning for 3D ICs based on MILP formulation”, in *IEICE Transactions on Fundamentals of Electronics, Communications and Computer Sciences*, vol.92, No.12, 2009, pp.2979-2989.
- [J33] Michael DeBole, Ramakrishnan Krishnan, Varsha Balakrishnan, Wenping Wang, Hong Luo, **Yu Wang**, Yuan Xie, Yu Cao, Narayanan Vijaykrishnan, “New-age: a negative bias temperature instability-estimation framework for microarchitectural components”, in *International journal of parallel programming (IJPP)*, vol.37, No.4, 2009, pp.417-431.
- [J34] Hong Luo, **Yu Wang**, Rong Luo, Huazhong Yang, “Software tools for analyzing NBTI-induced digital circuit degradation”, in *Journal of Electronics (China)*, vol.26, No.5, 2009, pp.715-719.
- [J35] Hong Luo, **Yu Wang**, Rong Luo, Huazhong Yang, Yuan Xie, “Temperature-aware NBTI modeling techniques in digital circuits”, in *IEICE transactions on electronics*, vol.92, No.6, 2009, pp.875-886.
- [J36] **Yu Wang**, Ku He, Rong Luo, Hui Wang, Huazhong Yang, “Two-phase fine-grain sleep transistor insertion technique in leakage critical circuits”, in *IEEE Transactions on Very Large Scale Integration Systems (TVLSI)*, vol.16, No.9, 2008, pp.1101-1113.
- [J37] **Yu Wang**, Huazhong Yang, Hui Wang, “Signal-Path-Level Dual-V t Assignment for Leakage Power Reduction”, in *Journal of Circuits, Systems, and Computers (JCSC)*, vol.15, No.02, 2006, pp.197-216.
- [J38] Huazhong Yang, **Yu Wang**, Hai Lin, Rong Luo, Hui Wang, “Fine-grain Sleep Transistor Insertion for Leakage Reduction”, in *Chinese Journal of Semiconductors*, vol.27, No.2, 2006, pp.258-265.

Conference Publications

- [C1] Gushu Li, Xiaoming Chen, Guangyu Sun, Henry Hoffmann, Yongpan Liu, **Yu Wang**, Huazhong Yang, “A STT-RAM-based Low-Power Hybrid Register File for GPGPUs”, in *52nd ACM/EDAC/IEEE Design Automation Conference (DAC)*, 2015, pp.1-6.
- [C2] **Yu Wang**, Tianqi Tang, Lixue Xia, Boxun Li, Peng Gu, Hai Li, Yuan Xie, Huazhong Yang, “Energy Efficient RRAM Spiking Neural Network for Real Time Classification”, in *Proceedings of the 25th Edition on Great Lakes Symposium on VLSI (GLSVLSI)*, 2015, pp.189-194.
- [C3] Boxun Li, Lixue Xia, Peng Gu, **Yu Wang**, and Huazhong Yang, “Merging the interface: Power, area and accuracy co-optimization for RRAM crossbar-based mixed-signal”, in *52nd ACM/EDAC/IEEE Design Automation Conference (DAC)*, 2015, pp.1-6.
- [C4] Xiaoxiao Liu, Mengjie Mao, Beiye Liu, Boxun Li, Hao Jiang, **Yu Wang**, Mark Barnell, Qing Wu, J. Joshua, “Reno: A Highly-efficient Reconfigurable Neuromorphic Computing Accelerator Design”, in *52nd ACM/EDAC/IEEE Design Automation Conference (DAC)*, 2015, pp.1-6.
- [C5] Xiaolong Xie, Yun Liang, **Yu Wang**, Guangyu Sun, Tao Wang, “Coordinated Static and Dynamic Cache Bypassing for GPUs”, in *Proceedings of the IEEE 21st International Symposium on High Performance Computer Architecture (HPCA)*, 2015, pp.76-88.
- [C6] Xiaoming Chen, **Yu Wang**, Huazhong Yang, “A Fast Parallel Sparse Solver for SPICE-based Circuit Simulators”, in *Proceedings of the Design, Automation & Test in Europe Conference & Exhibition (DATE)*, 2015, pp.205-210.
- [C7] Tianqi Tang, Lixue Xia, Boxun Li, Rong Luo, **Yu Wang**, Yiran Chen, Huazhong Yang, “Spiking Neural Network with RRAM : Can We Use it for Real-World Application?”, in *Proceedings of the Design, Automation & Test in Europe Conference & Exhibition (DATE)*, 2015, pp.860-865.
- [C8] Xinyu Niu, Wayne Luk, **Yu Wang**, “EURECA: On-Chip Configuration Generation for Effective Dynamic Data Access”, in *Proceedings of the ACM/SIGDA International Symposium on Field-Programmable Gate Arrays (FPGA)*, 2015, pp.74-83.
- [C9] Wulong Liu, Guoqing Chen, **Yu Wang**, Huazhong Yang, “Modeling and Optimization of Low Power Resonant Clock Mesh”, in *Proceedings of the 20th Asia and South Pacific Design Automation Conference (ASP-DAC)*, 2015, pp.478-483.
- [C10] Peng Gu, Boxun Li, Tianqi Tang, Shimeng Yu, Yu Cao, **Yu Wang**, Huazhong Yang, “Technological Exploration of RRAM Crossbar Array For Matrix-Vector Multiplication”, in *Proceedings of the 20th Asia and South Pacific Design Automation Conference (ASP-DAC)*, 2015, pp.106-111.
- [C11] Lixue Xia, Rong Luo, Bin Zhao, **Yu Wang**, Huazhong Yang, “An Accurate and Low Cost PM2.5 Estimation Method Based on Artificial Neural Network”, in *Proceedings of the 20th Asia and South Pacific Design Automation Conference (ASP-DAC)*, 2015, pp.190-195.
- [C12] Sicheng Li, Chumpeng Wu, Boxun Li, **Yu Wang**, Qinru Qiu and Hai Li, “FPGA Acceleration for Recurrent Neural Network Language Model”, in *Proceedings of the IEEE 23rd Annual International Symposium on Field-Programmable Custom Computing Machines (FCCM)*, 2015, pp.111-118.
- [C13] Song Yao, Xiaoming Chen, Jie Zhang, Qiaoyi Liu, Jia Wang, Qiang Xu, **Yu Wang**, Huazhong Yang, “FASTrust: Feature Analysis for Third-Party IP Trust Verification”, to appear in *International Test Conference (ITC)*, 2015.
- [C14] Yung-Hsiang Lu, Alan M. Kadin, Alexander C. Berg, Thomas M. Conte, Erik P. DeBenedictis, Rachit Garg, Ganesh Gingade, Bichlien Hoang, Yongzhen Huang, Boxun Li, Jingyu Liu, Wei Liu, Huizi Mao, Junran Peng, Tianqi Tang, Elie K. Track, Jingqiu Wang, Tao Wang, **Yu Wang**, Jun Yao, “Rebooting Computing and Low-Power Image Recognition Challenge”, to appear in *IEEE/ACM International Conference on Computer-Aided Design (ICCAD)*, 2015.
- [C15] Mengyuan Gu, Kaiyuan Guo, Wenqiang Wang, **Yu Wang**, Huazhong Yang, “An FPGA-based Real-time Simultaneous Localization and Mapping System”, to appear in *the International Conference on Field-Programmable Technology (FPT)*, 2015.
- [C16] Xijie Jia, Kaiyuan Guo, Wenqiang Wang, **Yu Wang**, Huazhong Yang, “A Real-Time High Resolution SURF on FPGA”, to appear in *the International Conference on Field-Programmable Technology (FPT)*, 2015.
- [C17] Yubin Li, Yuliang Sun, Guohao Dai, Yuzhi Wang, Jiakai Ni, **Yu Wang**, Guoliang Li, Huazhong Yang, “A Self-aware Data Compression System on FPGA in Hadoop”, to appear in *the International Conference on Field-Programmable Technology (FPT)*, 2015.
- [C18] Shimeng Yu, Pai-Yu Chen, Yu Cao, **Yu Wang**, Huaqiang Wu, “Scaling-up Resistive Synaptic Arrays for Neuro-inspired Architecture: Challenges and Prospect”, to appear in *IEEE International Electron Devices Meeting (IEDM)*, 2015.

- [C19] Luping Shi, Jing Pei, Ning Deng, Dong Wang, Dei Deng, **Yu Wang**, Youhui Zhang, Feng Chen, Mingguo Zhao, Sen Song, Fei Zeng, Guoqi Li, Huanglong Li, Cheng Ma, “Development of a Neuromorphic Computing System”, to appear in *IEEE International Electron Devices Meeting (IEDM)*, 2015.
- [C20] Shuangchen Li, Ang Li, Yuan Zhe, Yongpan Liu, Peng Li, Guangyu Sun, **Yu Wang**, Huazhong Yang, Yuan Xie, “Leveraging Emerging Nonvolatile Memory in High-Level Synthesis with Loop Transformations”, in *International Symposium on Low Power Electronics and Design (ISLPED)*, 2015.
- [C21] Chao Zhang, Guangyu Sun, Xian Zhang, Weiqi Zhang, Weisheng Zhao, Tao Wang, Yun Liang, Yongpan Liu, **Yu Wang**, Jiwu Shu, “Hi-fi Playback: Tolerating Position Errors in Shift Operations of Racetrack Memory”, in *Proceedings of the 42nd ACM/IEEE International Symposium on Computer Architecture (ISCA)*, 2015, pp.694-706.
- [C22] Boxun Li, **Yu Wang**, Yiran Chen, Hai Helen Li, Huazhong Yang, “ICE: inline calibration for memristor crossbar-based computing engine”, in *Proceedings of the Design, Automation & Test in Europe Conference & Exhibition (DATE)*, 2014, pp.24-28.
- [C23] Boxun Li, Erjin Zhou, Bo Huang, Jiayi Duan, **Yu Wang**, Ningyi Xu, Jiaxing Zhang, Huazhong Yang, “Large Scale Recurrent Neural Network on GPU”, in *Proceedings of the International Joint Conference on Neural Networks (IJCNN)*, 2014, pp.4062 - 4069.
- [C24] **Yu Wang**, Boxun Li, Rong Luo, Yiran Chen, Ningyi Xu, Huazhong Yang, “Energy efficient neural networks for big data analytics”, in *Proceedings of the Design, Automation & Test in Europe Conference & Exhibition (DATE)*, 2014, pp.1-2.
- [C25] Fei Chen, Yi Shan, Yu Zhang, **Yu Wang**, Hubertus Franke, Xiaotao Chang, Kun Wang, “Enabling FPGAs in the Cloud”, in *Proceedings of the 11th ACM Conference on Computing Frontiers*, 2014, pp.3:1-3:10.
- [C26] Guohao Dai, Yi Shan, Fei Chen, Yu Zhang, **Yu Wang**, Kun Wang and Huazhong Yang, “Online Scheduling for FPGA Computation in the Cloud”, in *Proceedings of the International Conference on Field-Programmable Technology (FPT)*, 2014, pp.330 - 333.
- [C27] Wenqiang Wang, Kaiyuan Guo, Mengyuan Gu, Yuchun Ma, **Yu Wang**, “A Universal FPGA-based Floating-point Matrix Processor for Mobile Systems”, in *Proceedings of the International Conference on Field-Programmable Technology (FPT)*, 2014, pp.139 - 146.
- [C28] Tianqi Tang, Rong Luo, Boxun Li, Hai Li, **Yu Wang**, Huazhong Yang, “Energy Efficient Spiking Neural Network Design with RRAM Devices”, in *Proceedings of the 14th International Symposium on Integrated Circuits (ISIC)*, 2014, pp.268 - 271.
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Student Supervision

Note: I started to co-advise Ph.D. and Master Students since 2007, I could have my own Master Students from 2009, Ph.D students from 2013.

Doctoral Dissertations Supervised

- [1]. 2015 **Wulong Liu**, Ph.D. in Electronic Engineering, Tsinghua University (Co-advise with Prof. Huazhong Yang)
Key Technologies of Three-dimensional Integrated Mixed-signal Systems
First Employer: Cognitive Computing, Huawei Research Lab.
- [2]. 2014 **Yi Shan**, Ph.D. in Electronic Engineering, Tsinghua University (Co-advise with Prof. Xu Chen)
Key Technologies of Big Data Application-Specific Custom Computing
First Job: Deep Learning Lab (IDL), Baidu
- [3]. 2014 **Xiaoming Chen**, Ph.D. in Electronic Engineering, Tsinghua University (Co-advise with Prof. Huazhong Yang)
Algorithm Parallelization and Architecture Optimization for Irregular Problems
First Job: Postdoc in CMU.

Master Thesis Supervised

- 2015 **Wenqiang Wang**, M.S. in Electronic Engineering, Tsinghua University
Research on FPGA-based Stereo Vision System
First job: Microsoft Research Asia
- 2014 **Zilong Wang**, M.S. in Electronic Engineering, Tsinghua University
Time Series Data Mining on FPGA
First job: Netease
- 2013 **Shuai Tao**, M.S. in Electronic Engineering, Tsinghua University (Co-advise with Prof. Hui Wang)
Hierarchical P/G Simulation Method for 3D IC
First job: Renmin Search
- 2013 **Xin Li**, M.S. in Electronic Engineering, Tsinghua University
Low Power Clock Tree Synthesis for embedded CPU
First job: 28th Research Institute
- 2009 **Yan Xu**, M.S. in Electronic Engineering, Tsinghua University (Co-advise with Prof. Huazhong Yang)
Power Gating Methodology in MPSOC considering P/G Noise
First job: MediaTek

Current Ph.D. Students

- [1]. Ph.D. **Haixiao Du**, (2011- now, Co-advise with Prof. Huazhong Yang) Ph.D. Student in Electronic Engineering, Tsinghua University
- [2]. Ph.D. **Yuliang Sun**, (2013- now, female) Ph.D. Student in Electronic Engineering, Tsinghua University
- [3]. Ph.D. **Lixue Xia**, (2013- now) Ph.D. Student in Electronic Engineering, Tsinghua University
- [4]. Ph.D. **Guohao Dai**, (2014- now) Ph.D. Student in Electronic Engineering, Tsinghua University
- [5]. Ph.D. **Kaiyuan Guo**, (2015- now) Ph.D. Student in Electronic Engineering, Tsinghua University
- [6]. Ph.D. **Jiantao Qiu**, (2015- now, Co-advise with Prof. Sen Song) Ph.D. Student in Electronic Engineering, Tsinghua University

Current M.S. Students

- [1]. M.S. **Xijie Jia**, (2011- now) M.S Student in Electronic Engineering, Tsinghua University
- [2]. M.S. **Boxun Li**, (2013- now) M.S Student in Electronic Engineering, Tsinghua University
- [3]. M.S. **Yubin Li**, (2013- now) M.S Student in Electronic Engineering, Tsinghua University
- [4]. M.S. **Tianqi Tang**, (2014- now, female) M.S Student in Electronic Engineering, Tsinghua University
- [5]. M.S. **Mengyuan Gu**, (2014- now, female) M.S Student in Electronic Engineering, Tsinghua University
- [6]. M.S. **Kang Zhao**, (2014- now) M.S Student in Electronic Engineering, Tsinghua University
- [7]. M.S. **Ming Cheng**, (2015- now) M.S Student in Electronic Engineering, Tsinghua University
- [8]. M.S. **Baofu Zhao**, (2015- now) M.S Student in Electronic Engineering, Tsinghua University

Presentations

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|------|--|-----------------------|
| 2015 | Invited Talk, IBM OpenPower Forum: 2nd Generation Distributed Computing Forum
“CNN on FPGA for Image-Net” | Beijing, China |
| 2015 | Invited Talk, Shanghai Tec University
“Energy Efficient Neural Networks for Big Data Analytics” | Shanghai, China |
| 2015 | Invited Talk, GLSVLSI 15
“Energy Efficient RRAM Spiking Neural Network for Real Time Classification” | Pittsburgh, PA, USA |
| 2015 | Invited Talk, Shanghai Jiaotong University
“Energy Efficient Neural Networks for Big Data Analytics” | Shanghai, China |
| 2015 | Invited Talk, University of Pitts
“Energy Efficient Neural Networks for Big Data Analytics” | Pittsburgh, PA, USA |
| 2015 | Invited Talk, CMU
“Hardware Acceleration for Data Analytics on FPGA” | Pittsburgh, PA, USA |
| 2015 | Invited Talk, UIUC
“Energy Efficient Neural Networks for Big Data Analytics” | Urbana, IL, US |
| 2015 | Invited Talk, UCLA
“Energy Efficient Neural Networks for Big Data Analytics” | LA, CA, US |
| 2015 | Invited Talk, Institute of Software, Chinese Academy of Science
“A Heterogeneous Accelerator Platform for Multi-Subject Voxel-based Brain Network Analysis” | Beijing, China |
| 2014 | Invited Talk, Huawei
“Heterogeneous Hardware Computing for Big Data Analytics” | Shenzhen, China |
| 2014 | Invited Talk, Intel Research China
“Energy Efficient Neural Networks for Big Data Analytics” | Beijing, China |
| 2014 | Invited Talk, UCSB
“Energy Efficient Neural Networks for Big Data Analytics” | Santa Barbara, CA, US |
| 2014 | Invited Talk, Asia Sensor Workshop
“Time Series Data Mining on FPGAs” | Taiwan |
| 2013 | Invited Talk, Cambridge, Computing Lab
“Energy Efficient Computing System in NICS CAD” | London, UK |
| 2013 | Invited Talk, Imperial College
“Streaming Similarity Search on FPGA based on Dynamic Time Warping” | London, UK |
| 2012 | Invited Talk, DSMC Workshop at ICCAD
“Streaming Similarity Computing on FPGAs” | San Jose, CA, USA |
| 2012 | Invited Talk, Profit 2012
“A Heterogeneous Accelerator Platform for Multi-Subject Voxel-based Brain Network Analysis” | China |
| 2012 | Invited Talk, Imperial College
“Voxel-based Brain Network Analysis based on hybrid computing platforms” | London, UK |
| 2011 | Invited talk, ICCAD11
“A Heterogeneous Accelerator Platform for Multi-Subject Voxel-based Brain Network Analysis” | San Jose, CA, USA |

2011	Invited Talk, National Tsinghua University “Sparse Matrix/Graph Problems on Many Cores: LU Decomposition and Brain Network Analysis”	Taiwan
2010	Invited talk, ASQED’10 “Hardware Computing for Brain Network Analysis”	Penang, Malaysia
2010	Invited Talk, National University of Singapore “Recent MPSoC research work in Nano-Integrated Circuits and Systems (NICS) Tsinghua”	Singapore
2010	Invited Talk, Pennsylvania State University “Recent MPSoC research work in Nano-Integrated Circuits and Systems (NICS) Tsinghua”	University Park, PA, USA

Service and Activities

Professional Community

2014 - now	Committee Member, ACM SIGDA Northern China Chapter
2015 - now	Founding Member, IEEE CEDA Beijing Chapter
2014 - now	Senior Member, IEEE
2014 - now	Founding Member, Research Center of Brain Inspired Computing Systems in Tsinghua University

Editorial Board

2013.12 - now	Associate Editor, IEEE Transactions on CAD (TCAD)
2013.05 - now	Associate Editor, Journal of Circuits, Systems, and Computers (JCSC)
2015	Guest Co-Editor, Integration, the VLSI Journal
2015	Guest Co-Editor, IEEE Transactions on Multi-Scale Computing Systems

Services for Conferences

2012 - now	Finance Co-Chair, International Symposium on Low Power Electronics and Design (ISLPED)
2015	Selection Committee Member, Significant Papers from the First 25 Years of the FPL Conference
2011	Program Co-Chair, International Conference on Field Programmable Technology (ICFPT)
2011	Publicity Co-Chair, International Symposium on Low Power Electronics and Design (ISLPED)
2010	Demo Session Chair, Special Session Chair, International Conference on Field Programmable Technology (ICFPT)
2015 - now	Technical Program Committee Member, IFIP/IEEE International Conference on Very Large Scale Integration (VLSI-SoC)
2015 - now	Technical Program Committee Member, IEEE International Conference on Parallel and Distributed Systems (ICPADS)
2014 - now	Technical Program Committee Member, Design Automation Conference (DAC)
2014 - now	Technical Program Committee Member, ACM International Symposium on Field-Programmable Gate Arrays (FPGA)
2014 - now	Technical Program Committee Member, IEEE/ACM International Conference on Computer-Aided Design (ICCAD)
2014 - now	Technical Program Committee Member, Asia and South Pacific Design Automation Conference (ASPDAC)
2014	Technical Program Committee Member, International Conference on VLSI Design (VLSI-D)
2014 - now	Technical Program Committee Member, International Symposium on Highly Efficient Accelerators and Reconfigurable Technologies (HEART)
2012 - now	Technical Program Committee Member, Design Automation and Test in Europe (DATE)
2010 - now	Technical Program Committee Member, International Symposium on Low Power Electronics and Design (ISLPED)
2010 - 2012	Technical Program Committee Member, Asia and South Pacific Design Automation Conference (ASPDAC)
2010 - now	Technical Program Committee Member, International Conference on Field Programmable Technology (ICFPT)
2009 - 2013	Technical Program Committee Member, IEEE Computer Society Annual Symposium on VLSI (ISVLSI)
2009 - 2010	Technical Program Committee Member, Asia Symposium on Quality Electronic Design (ASQED)
2009 - 2010	Technical Program Committee Member, IEEE/ACM International Conference on Computer-Aided Design (ICCAD)
2008 - now	Technical Program Committee Member, International Symposium on Quality Electronic Design (ISQED)

External Reviewers

2008-	Reviewer of APCCAS, ISCAS, ISQED, GLSVLSI, DAC, VLSID08/09, ASPDAC08/09, DATE09; IEEE Transactions on VLSI, International Journal of Electronics, IEEE Transactions on Parallel and Distributed Systems, IEEE Transactions on Computer-Aided Design, ACM Transactions on Embedded Computing Systems, and etc
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