Miaoqing Huang

Contact Information

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Current Position

Associate Professor, University of Arkansas **July 2016 -**

Area of Specialization

Manycore architecture and system, high-performance computing with accelerators (e.g., FPGA, GPU, Intel MIC), cloud computing, edge computing, reconfigurable computing, hardware-oriented security

Appointments held

Assistant Professor, University of Arkansas, USA **Jan. 2010 - June 2016**
Postdoctoral Scientist, The George Washington University, USA **Sept. - Dec. 2009**
Research Assistant, The George Washington University, USA **Sept. 2004 - Aug. 2009**
Teaching Assistant, The George Washington University, USA **Sept. 2003 - May 2004**
Product Engineer, Intel Products (Shanghai) Ltd., China **Jan. - Aug. 2003**

Education

Ph.D. in Computer Engineering, The George Washington University **Sept. 2003 - Aug. 2009**

- ▷ Advisor: Prof. Tarek El-Ghazawi

Doctor of Engineering, Shanghai Institute of Technical Physics, Chinese Academy of Sciences (CAS) **Aug. 1998 - Aug. 2002**

- ▷ Advisor: Prof. CHEN Guilin (Academician of CAS)

B.S. in Electrical Engineering, Fudan University **Sept. 1994 - July 1998**

Grants and Donations

National Science Foundation (NSF):

- ▷ 2213738 CCRI:Planning-C:SCA-in-Cloud: Infrastructure to Perform Side-Channel Attacks on Cryptographic Algorithms; 10/1/2022-9/30/2024; PI with David Andrews and Alexander Nelson (Co-PIs); $100,000
- ▷ 1955820 Collaborative Research:SHF:Medium:Machine Learning on the Edge for Real-Time Microsecond State Estimation of High-Rate Dynamic Events; 8/1/2020-7/31/2024; Co-PI with David Andrews (PI); $509,070
- ▷ 2019541 Engaging Doctoral Students in Autonomic and Self-Organizing Computing Systems Research; 7/1/2020-6/30/2022; Solo-PI; $7,500
- ▷ 1219062 Cache Design for Solid-State Drives and Its Application in Data-intensive Applications; 10/1/2012-9/30/2015; Solo-PI; $230,000 + $16,000 (REU)

National Institute of Standards and Technology (NIST):

- ▷ A Comprehensive and Quantitative Evaluation of NIST Round 2 Post-quantum Cryptography (PQC) Candidate Algorithms; 5/1/2020-9/30/2021; PI with David Andrews and Alexander Nelson (Co-PIs); $105,175

National Aeronautics and Space Administration (NASA):

- ▷ ARNASAEPSCoRRID2022: Onboardcomputingsystemsforremotesensingspatio-temporal environmental data streams; 1/15/2023-9/30/2024; PI with Xiao Liu and Yaqian He (Co-PIs); $40,000
- ▷ New Computer Vision Methods for NASA Robotic Planetary Exploration; 12/21/2012-10/31/2016; Co-PI with Cang Ye (PI) and Yu Sun (Co-PI); $750,000

▷ Arkansas NASA EPSCoR Research Infrastructure Development (RID) Travel Grant; 2013; $1,500

Department of Defense:

▷ H98230-18-1-0319 DoD Cybersecurity Scholarship Program (Capacity Building); 8/16/2018-8/15/2019; Co-PI with Brajendra Panda (PI); $94,100

University of Arkansas:

▷ Chancellor's Innovation and Collaboration Fund: Artificial Intelligence System for Poultry Behavior Monitoring; 10/1/2021-3/31/2023; PI with Khoa Luu and Yi Liang (Co-PIs); $88,142

▷ Chancellor's Innovation and Collaboration Fund: Intelligent Soft Robotic Gripper for Fresh-market Berry Harvesting; 07/01/2019-06/30/2021; Co-PI with Yue Chen (PI), Renee Terrell Threlfall and Paul Millett (Co-PIs); $77,844

▷ Engineering Research and Innovation Seed Funding Program (ERISF): Spatio-Temporal Big Data Analytics for Convection-Diffusion Processes; 01/01/2019-12/31/2019; Co-PI with Xiao Liu (PI); $25,000

▷ Chancellor's Innovation and Collaboration Fund: Toward Efficient and Broadband Terahertz Sources with Ultrathin Black Phosphorus; 07/01/2018-06/30/2019; Co-PI with Hugh Churchill (PI) and Magda El-Shenawee (Co-PI); $83,876

▷ Engineering Research and Innovation Seed Funding Program (ERISF): Enabling Large-Scale Network Analysis in Complex Systems Design; 07/01/2018-06/30/2019; PI with Zhenghui Sha (Co-PI); $24,801

▷ Provost's Collaborative Research Grant: Innovative High-Throughput Computing for Predictive Modeling in Biological and Material Sciences; 01/01/2018-08/01/2018; PI with Feng Wang (Co-PI); $3,000

▷ Honors College: Faculty Equipment and Technology Grants; 2017; PI; $4,423

▷ Provost's Collaborative Research Grant: An Edge-count Test to Identify Molecular Pathways Associated with Cancer Progressions; 01/01/2017-07/01/2017; Co-PI with Qingyang Zhang (PI); $2,000

▷ Arkansas Biosciences Institute: A Systems Biology Approach for Pathway Level Analysis of TCGA Lung Cancer Data; 07/01/2016-06/30/2017; Co-PI with Qingyang Zhang (PI); $21,410

NVIDIA Corporation:

▷ CUDA Teaching Center, CUDA Research Center

▷ 3 Titan Xp, 1 Tesla K40, 1 Tesla K20, 1 Tesla C2075, 1 Tesla C2070, 50 Geforce GTX480, 1 CARMA development kit, 2 Jetson TK1 DevKits

▷ $6,638 (TA Matching Fund)

Altera Corporation:

▷ FPGA and software donations (1 Stratix-2S130, 2 Stratix-2S180 devices: $30,224; 1 DE5 board: $8,000; 9 Stratix-4E820 devices: $105,831)

Xilinx Corporation:

▷ FPGA and software donations (5 ML605 boards: $8,975; 5 VC707 boards: $17,475)

Awards

Outstanding Researcher Award, College of Engineering, University of Arkansas, 2013-2014

Patents

US 8,386,546 B2 "A Montgomery Multiplication Architecture," – *issued on February 26, 2013.*
US 8,433,736 B2 "A Scalable Montgomery Multiplication Architecture," – *issued on April 30, 2013.*

Publications

Journal articles (Total: 21)

J21 Jiacheng Cao, Wei Xiong, Jie Lu, Peilin Chen, Jian Wang, Jinmei Lai, **Miaoqing Huang**, "An Optimized EEGNet Processor for Low-Power and Real-Time EEG Classification in Wearable Brain-Computer Interfaces," *Microelectronics Journal*, Volume 145, March 2024.

J20 Wei Xiong, Jiacheng Cao, Yaozhang Liu, Jian Wang, Jinmei Lai, **Miaoqing Huang**, "A Reliable and Efficient Online Solution for Adaptive Voltage and Frequency Scaling on FPGAs," *IEEE Transactions on Very Large Scale Integration Systems*, Paper Id: TVLSI-00586-2023, 2024.

J19 Yiming Huang, **Miaoqing Huang**, Zhongkui Lei, and Jiaxuan Wu, "A Pure Hardware Implementation of CRYSTALS-KYBER PQC Algorithm through Resource Reuse", *IEICE Electronics Express*, vol. 17, 2020.

J18 Genlang Chen, Zhiqian Xu, Jia-jian Zhang, Guo-jun Wang, Hai Jiang, and **Miaoqing Huang**, "Generic attribute revocation systems for attribute-based encryption in cloud storage", *Frontiers of Information Technology & Electronic Engineering*, vol. 20, no. 6, pp. 773-786, July 2019.

J17 Chenggang Lai, Xuan Shi, and **Miaoqing Huang**, "Efficient utilization of multi-core processors and many-core co-processors on supercomputer Beacon for scalable geocomputation and geo-simulation over big earth data", *Big Earth Data*, vol. 2, no. 1, pp. 65-85, February 2018.

J16 Genlang Chen, Chenggang Lai, **Miaoqing Huang**, and Guanghui Song, "A hierarchical learning framework for seafloor scene classification", *Indian Journal of Geo-Marine Sciences (IJMS)*, vol. 46, no. 7, pp. 1352-1357, July 2017.

J15 **Miaoqing Huang**, Chenggang Lai, Xuan Shi, Zhijun Hao, and Haihang You, "Study of Parallel Programming Models on Computer Clusters with Intel MIC Coprocessors", *International Journal of High Performance Computing Applications*, vol. 31, no. 4, pp. 303-315, July 2017.

J14 Qingfeng Guan, Xuan Shi, **Miaoqing Huang**, and Chenggang Lai, "A hybrid parallel Cellular Automata model for urban growth simulation over GPU/CPU heterogeneous architectures," *International Journal of Geographical Information Science*, vol. 30, no. 3, pp. 494-514, March 2016.

J13 Xuan Shi, Chenggang Lai, **Miaoqing Huang**, and Haihang You, "Geocomputation over the Emerging Heterogeneous Computing Infrastructure," *Transactions in GIS*, vol. 18, no. S1, pp. 3-24, Nov. 2014.

J12 Xuan Shi, **Miaoqing Huang**, Haihang You, Chenggang Lai, and Zhong Chen, "Unsupervised image classification over supercomputers Kraken, Keeneland and Beacon," *GIScience & Remote Sensing*, vol. 51, no. 3, pp. 321-338, May 2014.

J11 **Miaoqing Huang** and David Andrews, "Modular Design of Fully Pipelined Reduction Circuits on FPGAs," *IEEE Transactions on Parallel and Distributed Systems*, vol. 24, no. 9, pp. 1818-1826, Sept. 2013.

J10 Khaled Benkrid, Esam El-Araby, **Miaoqing Huang**, Kentaro Sano, and Thomas Steinke, "High-Performance Reconfigurable Computing," *editorial for special issue on high-performance reconfigurable computing, International Journal of Reconfigurable Computing*, vol. 2012, Article ID 104963, pp. 1-2, 2012. doi:10.1155/2012/104963.

J9 **Miaoqing Huang**, Vikram K. Narayana, Mohamed Bakhouya, Jaafar Gaber, and Tarek El-Ghazawi, "Efficient Mapping of Task Graphs onto Reconfigurable Hardware Using Architectural Variants," *IEEE Transactions on Computers*, vol. 61, no. 9, pp. 1354-1360, Sept. 2012.

J8 Lingyuan Wang, **Miaoqing Huang**, and Tarek El-Ghazawi, "Towards Efficient GPU Sharing on Multicore Processors," *ACM SIGMETRICS Performance Evaluation Review*, vol. 40, no. 2, pp. 119-124, Sept. 2012.

J7 **Miaoqing Huang**, Kris Gaj, and Tarek El-Ghazawi, "New Hardware Architectures for Montgomery Modular Multiplication Algorithm," *IEEE Transactions on Computers*, vol. 60, no. 7, pp. 923-936, July 2011.

J6 Ozlem Kilic, **Miaoqing Huang**, Charles Conner, and Mark S. Mirotznik, "Hardware Accelerated Design of Millimeter Wave Antireflective Surfaces: A Comparison of Field-Programmable Gate Array (FPGA) and Graphics Processing Unit (GPU) Implementations," *ACES (The Applied Computation Electromagnetics Society) Journal*, vol. 26, no. 3, pp. 188-198, March 2011.

J5 **Miaoqing Huang**, Vikram K. Narayana, Harald Simmler, Olivier Serres, and Tarek El-Ghazawi, "Reconfiguration and Communication-Aware Task Scheduling for High Performance Reconfigurable Computing," *ACM Transactions on Reconfigurable Technology and Systems*, vol. 3, no. 4, pp. 20:1-20:25, Nov. 2010.

J4 Ozlem Kilic and **Miaoqing Huang**, "Overview of Reconfigurable Computing Platforms and Their Applications in Electromagnetics Applications," *ACES (The Applied Computation Electromagnetics Society) Journal*, vol. 25, no. 4, pp. 283-293, April 2010.

J3 **Miaoqing Huang**, Olivier Serres, Tarek El-Ghazawi, and Gregory Newby, "Parameterized Hardware Design on Reconfigurable Computers: An Image Processing Case Study," *International Journal of Reconfigurable Computing*, vol. 2010, pp. 1-11, April 2010. doi:10.1155/2010/454506.

J2 Proshanta Saha, Esam El-Araby, **Miaoqing Huang**, Mohamed Taher, Sergio Lopez-Buedo, Tarek El-Ghazawi, Chang Shu, Kris Gaj, Alan Michalski, Duncan Buell, "Portable library development for reconfigurable computing systems: A case study," *Parallel Computing*, vol. 34, no. 4+5, pp. 245-260, May 2008.

J1 Tarek El-Ghazawi, Esam El-Araby, **Miaoqing Huang**, Kris Gaj, Volodymyr Kindratenko, and Duncan Buell, "The promise of high-performance reconfigurable computing," *IEEE Computer*, vol. 41, no. 2, pp. 69-76, February 2008.

Conference publications (Total: 77)

C77 Quan Mai, Susan Gauch, Douglas Adams, and **Miaoqing Huang**, "Sequence Graph Network for Online Debate Analysis," *The Sixteenth International Conference on Information, Process, and Knowledge Management (eKNOW 2024)*, pp. 1-8, May 2024.

C76 MD Arafat Kabir, Tendayi Kamucheka, Nathaniel Fredricks, Joel Mandebi, Jason Bakos, **Miaoqing Huang**, and David Andrews, "The BRAM is the Limit: Shattering Myths, Shaping Standards, and Building Scalable PIM Accelerators", *The 32nd IEEE International Symposium On Field-Programmable Custom Computing Machines (FCCM 2024)*, pp. 1-1, May 2024.

C75 Tristen Teague, Mayeesha Mahzabin, Alexander Nelson, David Andrews, and **Miaoqing Huang**, "Towards Cloud-based Infrastructure for Post-Quantum Cryptography Side-channel Attack Analysis," *IEEE Design Methodologies Conference (DMC 2023)*, pp. 1-6, September 2023.

C74 MD Arafat Kabir, Ehsan Kabir, Joshua Hollis, Eli Levy-Mackay, Atiyehsadat Panahi, Jason Bakos, **Miaoqing Huang**, and David Andrews, "FPGA Processor In Memory Architectures (PIMs): Overlay or Overhaul?" *The 33rd International Conference on Field-Programmable Logic and Applications (FPL 2023)*, pp. 1-7, September 2023.

C73 Ehsan Kabir, Daniel Coble, Joud N. Satme, Austin R.J. Downey, Jason D. Bakos, David Andrews, and **Miaoqing Huang**, "Accelerating LSTM-based High-Rate Dynamic System Models," *The 33rd International Conference on Field-Programmable Logic and Applications (FPL 2023)*, pp. 1-6, September 2023.

C72 MD Arafat Kabir, Joshua Hollis, Atiyehsadat Panahi, Jason Bakos, **Miaoqing Huang**, and David Andrews, "Making BRAMs Compute: Creating Scalable Computational Memory Fabric Overlays," The 31st IEEE International Symposium On Field-Programmable Custom Computing Machines (FCCM 2023), pp. 1-1, May 2023.

C71 Quan Mai, Ukash Nakarmi, and **Miaoqing Huang**, "BrainVGAE: End-to-End Graph Neural Network for Noisy fMRI Dataset," *IEEE International Conference on Bioinformatics and Biomedicine (BIBM 2022)*, pp. 1-4, December 2022.

C70 Tendayi Kamucheka, Alexander Nelson, David Andrews, and **Miaoqing Huang**, "A Masked Pure-Hardware Implementation of Kyber Cryptographic Algorithm," *International Conference on Field Programmable Technology (FPT 2022)*, December 2022. (Full version of the paper presented at NIST 4th PQCStandardization Conference, Cryptology ePrint Archive: https://eprint.iacr.org/2022/1547)

C69 Pha Nguyen, Thanh-Dat Truong, **Miaoqing Huang**, YiLiang, NganLe, KhoaLuu, "Self-supervised Domain Adaptation in Crowd Counting," *The 29th IEEE International Conference in Image Processing (ICIP)*, pp. 1-5, October 2022.

C68 Daniel Coble, Joud Satme, Ehsan Kabir, Austin R.J. Downey, Jason D. Bakos, David Andrews, **Miaoqing Huang**, Adrine Moura, and Jacob Dodson, "Towards online structural state-estimation with sub-millisecond latency," *92nd Shock and Vibratino Symposium*, September, 2022.

C67 Ehsan Kabir, Arpan Poudel, Zeyad Aklah, **Miaoqing Huang**, and David Andrews, "A Runtime Programmable Accelerator for Convolutional and Multilayer Perceptron Neural Networks on FPGA," *The 18th International Symposium on Applied Reconfigurable Computing (ARC)*, pp. 1-15, September 2022.

C66 Atiyehsadat Panahi, Ehsan Kabir, Austin Downey, David Andrews, **Miaoqing Huang**, and Jason Bakos, "High-Rate Machine Learning for Forecasting Time-Series Signals," *The 30th IEEE Symposium on Field-Programmable Custom Computing Machines (FCCM)*, pp. 1-9, May 2022.

C65 Tendayi Kamucheka, Michael Fahr, Tristen Teague, Alexander Nelson, David Andrews, and **Miaoqing Huang**, "Power-based Side Channel Attack Analysis on PQC Algorithms," *NIST Third PQC Standardization Conference*, pp. 1-9, June 2021.

C64 Tendayi Kamucheka, Zhijun Gui, **Miaoqing Huang**, Hugh Churchill, and Magda El-Shenawee, "Benchmark of Acceleware vs XFdtd for Field Simulations of Microstrip Patch Antenna," in *Proceedings of 2020 International Applied Computational Electromagnetics Society (ACES) Symposium*, pp. 1-2, July 2020.

C63 M. Hasan Doha, Ahmad F. Rawwagah, Josh P. Thompson, Arash Fereidouni, Kenji Watanabe, Takashi Taniguchi, **Miaoqing Huang**, Magda El-Shenawee, and Hugh Churchill, "THz Photoconductive Antennas Using Thin Black Phosphorus," in *Proceedings of 2020 American Physical Society March Meeting*, pp. 1-2, March 2020.

C62 Guiying Zeng and **Miaoqing Huang**, "Design and Demonstration of a SIMD System Based on the Bit-serial PE Array in FPGA," in *Proceedings of 2019 IEEE 3rd International Conference on Electronic Information Technology and Computer Engineering (EITCE 2019)*, pp. 1801-1804, October 2019.

C61 Chenggang Lai, Yirong Chen, Xuan Shi, **Miaoqing Huang**, and Genlang Chen, "Performance Improvement on Heterogeneous Platforms: A Machine Learning Based Approach," in *Proceedings of 5th Annual Conference on Computational Science & Computational Intelligence (CSCI'18)*, pp. 1-9, Las Vegas, USA, December 13-15, 2018.

C60 Chenggang Lai, Xuan Shi, and **Miaoqing Huang**, "Performance Optimization on Intel Xeon Phi Through Load Balancing,," in *Proceedings of 24th International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA'18)*, pp. 1-7, July 30 - August 2, 2018.

C59 Amir Shariffar, Tyler Bowman, Chenggang Lai, **Miaoqing Huang**, Magda El-Shenawee, and Keith Bailey, "Modelling the Interaction of THz Waves with Breast Cancer Tissues," in *Proceedings of 2018 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting*, pp. 1843-1844, July 8-13, 2018.

C58 Hongyuan Ding and **Miaoqing Huang**, "PolyPC: Polymorphic Parallel Computing Framework on Embedded Reconfigurable System," in *Proceedings of 27th International Conference on Field-Programmable Logic and Applications (FPL)*, pp. 1-8, September 4-8, 2017.

C57 Chenggang Lai, **Miaoqing Huang**, and Xuan Shi, "SRC: Accelerating the Calculation of Minimum Set of Viewpoints for Maximum Coverage over Digital Elevation Model Data by Hybrid Computer Architecture and Systems," in *Proceedings of the 24th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems*, pp. 1-2, October 31- November 3, 2016.

C56 Chenggang Lai and **Miaoqing Huang**, "Hybrid Implementation of Image Stitching on Computers with GPUs," in *Proceedings of 20th International Conference on Image Processing, Computer Vision, & Pattern Recognition (IPCV'16)*, pp. 1-7, Las Vegas, July 25-28, 2016.

C55 Hong Fan, **Miaoqing Huang**, Chenggang Lai, Jinming Yu, and Wujun Xu, "Accelerating DCT-based color image watermarking on GPUs," in *Proceedings of 20th International Conference on Image Processing, Computer Vision, & Pattern Recognition (IPCV'16)*, pp. 1-4, Las Vegas, July 25-28, 2016.

C54 Hongyuan Ding, Sen Ma, **Miaoqing Huang**, and David Andrews, "OOGen: An Automated Generation Tool for Custom MPSoC Architectures Based on Object-oriented Programming Methods," in *Proceedings of 23rd Reconfigurable Architectures Workshop (RAW)*, as part of IPDPS 2016, pp. 1-8, Chicago, May 23-24, 2016.

C53 Hongyuan Ding and **Miaoqing Huang**, "Exploiting Hardware Abstraction for Hybrid Parallel Computing Framework," in *Proceedings of 2015 International Conference on Reconfigurable Computing and FPGAs (ReConFig 2015)*, pp. 1-7, Mayan Riviera, Mexico, December 7-9, 2015.

C52 Hongyuan Ding and **Miaoqing Huang**, "Achieving Energy-efficiency on MPSoCs: Performance and Power Optimizations," in *Proceedings of 2015 International Conference on Reconfigurable Computing and FPGAs (ReConFig 2015)*, pp. 1-7, Mayan Riviera, Mexico, December 7-9, 2015.

C51 Sen Ma, Hongyuan Ding, **Miaoqing Huang**, and David Andrews, "Archborn: An Open Source Tool for Automated Generation of Multiprocessor Architecture," in *Proceedings of 2015 International Conference on Reconfigurable Computing and FPGAs (ReConFig 2015)*, pp. 1-6, Mayan Riviera, Mexico, December 7-9, 2015.

C50 Chenggang Lai, **Miaoqing Huang** and Genlang Chen, "Towards Optimal Task Distribution on Computer Clusters with Intel MIC Coprocessors," in *Proceedings of 2015 International Conferences on High Performance Computing and Communications (HPCC)*, pp. 1-4, New York, NY, August 24-26, 2015.

C49 Genlang Chen, Chenggang Lai and **Miaoqing Huang**, "Parallel Sparse Coding for Seafloor Image Analysis," in *Proceedings of Sixth International Symposium on Highly Efficient Accelerators and Reconfigurable Technologies (HEART)*, pp. 1-4, Boston, MA, June 1-2, 2015.

C48 Hongyuan Ding and **Miaoqing Huang**, "Performance and Energy Optimization on MPSoCs by Enabling STT-MRAM LUTs," in *Proceedings of 23rd IEEE International Symposium on Field-Programmable Custom Computing Machines (FCCM)*, pp. 35, Vancouver, BC, Canada, May 3-5, 2015.

C47 Hongyuan Ding and **Miaoqing Huang**, "An Automatic Design Flow for Hybrid Parallel Computing on MPSoCs," in *Proceedings of 23rd ACM/SIGDA International Symposium on Field-Programmable Gate Arrays (FPGA 2015)*, Monterey, California, February 22-24, 2015.

C46 Hongyuan Ding and **Miaoqing Huang**, "Improve memory access for achieving both performance and energy efficiencies on heterogeneous systems," in *Proceedings of 2014 International Conference on Field-Programmable Technology (FPT'14)*, pp. 91-98, Shanghai, China, December 10-12, 2014.

C45 Hongyuan Ding and **Miaoqing Huang**, "A Unified OpenCL-flavor Programming Model with Scalable Hybrid Hardware Platform on FPGAs," in *Proceedings of 2014 International Conference on ReConFigurable Computing and FPGAs (ReConFig 2014)*, pp. 1-7, Cancun, Mexico, December 8-10, 2014.

C44 **Miaoqing Huang** and Chenggang Lai, "Parallelizing Computer Vision Algorithms on Acceleration Technologies: A SIFT Case Study," in *Proceedings of 2nd IEEE China Summit and International Conference on Signal and Information Processing (ChinaSIP'14)*, pp. 325-329, Xi'an, China, July 9-13, 2014.

C43 Chenggang Lai, Zhijun Hao, **Miaoqing Huang**, Xuan Shi, and Haihang You, "Comparison of Parallel Programming Models on Intel MIC Computer Cluster," in *Proceedings of Fourth International Workshop on Accelerators and Hybrid Exascale Systems (AsHES) as part of IPDPS*, pp. 925-932, Phoenix, AZ, May 19, 2014.

C42 Shiming Li, **Miaoqing Huang**, Hongyuan Ding, and Sen Ma, "A Hierarchical Memory Architecture with NoC Support for MPSoC on FPGAs," in *Proceedings of The 22nd IEEE International Symposium on Field-Programmable Custom Computing Machines (FCCM)*, pp. 173, Boston, MA, May 11-13, 2014.

C41 **Miaoqing Huang** and Shiming Li, "A Delay-based PUF Design Using Multiplexer Chains," in *Proceedings of 2013 International Conference on ReConFigurable Computing and FPGAs (ReConFig 2013)*, pp. 1-6, Cancun, Mexico, Dec. 9-11, 2013.

C40 **Miaoqing Huang** and Chenggang Lai, "Accelerating Applications using GPUs on Embedded Systems and Mobile Devices," in *Proceedings of 15th IEEE International Conference on High Performance Computing and Communications (HPCC 2013)*, pp. 1031-1038, Zhangjiajie, China, November 13-15, 2013.

C39 Chenggang Lai, **Miaoqing Huang**, Xuan Shi, and Haihang You, "Accelerating Geospatial Applications on Hybrid Architectures," in *Proceedings of 15th IEEE International Conference on High Performance Computing and Communications (HPCC 2013)*, pp. 1545-1552, Zhangjiajie, China, November 13-15, 2013.

C38 Ping Huang, Guangping Wan, Ke Zhou, **Miaoqing Huang**, Chunhua Li, and Hua Wang, "Improve Effective Capacity and Lifetime of Solid State Drives," in *Proceedings of 8th IEEE International Conference on Networking, Architecture, and Storage (NAS 2013)*, pp. 50-59, Xi'an, China, July 17-19, 2013.

C37 **Miaoqing Huang** and Shiming Li, "A Delay-based PUF Design Using Multiplexers on FPGA," in *Proceedings of The 21st IEEE International Symposium on Field-Programmable Custom Computing Machines (FCCM 2013)*, pp. 226, Seattle, Washington, USA, April 28-30, 2013.

C36 Sen Ma, **Miaoqing Huang**, and David Andrews, "Developing Application-Specific Multiprocessor Platforms on FPGAs," in *Proceedings of 2012 International Conference on ReConFigurable Computing and FPGAs (ReConFig 2012)*, pp. 1-6, Cancun, Mexico, Dec. 5-7, 2012.

C35 Liang Men, **Miaoqing Huang**, and John Gauch, "Accelerating Mean Shift Segmentation Algorithm on Hybrid CPU/GPU Platforms," in *Proceedings of 2012 International Workshop on Modern Accelerator Technologies for GIScience (MAT4GIScience 2012) held as part of GIScience 2012*, Columbus, OH, Sept. 18, 2012.

C34 Eugene Cartwright, Azad Fahkari, Sen Ma, Christina Smith, **Miaoqing Huang**, David Andrews, and Jason Agron, "Automating the Design of MLUT MPSOPC FPGA's in the Cloud," in *Proceedings of the 22nd International Conference on Field Programmable Logic and Applications (FPL 2012)*, pp. 231-236, Oslo, Norway, August 29-31, 2012.

C33 **Miaoqing Huang** and Liang Men, "Improving the Performance of On-Board Cache for Flash-based Solid-State Drives," in *Proceedings of The 7th IEEE International Conference on Networking, Architecture, and Storage (NAS 2012)*, pp. 283-287, Xiamen, China, June 28-30, 2012.

C32 Sen Ma, **Miaoqing Huang**, Eugene Cartwright, and David Andrews, "Scalable Memory Hierarchies for Embedded Manycore Systems," in *Proceedings of The 8th International Symposium on Applied Reconfigurable Computing (ARC 2012), LNCS 7199*, pp. 151-162, Hong Kong, China, March 19-23, 2012.

C31 Lingyuan Wang, **Miaoqing Huang**, and Tarek El-Ghazawi, "Towards Efficient GPU Sharing on Multicore Processors," in *Proceedings of The 2nd International Workshop on Performance Modeling, Benchmarking and Simulation of High Performance Computing Systems (PMBS11) held as part of SC11*, Seattle, US, Nov. 13, 2011.

C30 Liang Zhou, **Miaoqing Huang**, and Scott C. Smith, "High-Performance and Area-Efficient Hardware Design for Radix-2^k Montgomery Multipliers," in *Proceedings of The 2011 International Conference on Computer Design (CDES'11)*, Las Vegas, USA, July 18-21, 2011.

C29 Lingyuan Wang, **Miaoqing Huang**, and Tarek El-Ghazawi, "Exploiting Concurrent Kernel Execution on Graphic Processing Units," in *Proceedings of The 2011 International Conference on High Performance Computing & Simulation (HPCS 2011)*, pp. 24-32, Istanbul, Turkey, July 4-8, 2011.

C28 Eugene Cartwright, Sen Ma, David Andrews, and **Miaoqing Huang**, "Creating HW/SW Co-Designed MPSoPC's from High Level Programming Models," in *Proceedings of Workshop on Multiprocessor Systems on (Programmable) Chips (MPSoC 2011) as part of The 2011 International Conference on High Performance Computing & Simulation (HPCS 2011)*, pp. 554-560, Istanbul, Turkey, July 4-8, 2011.

C27 Lingyuan Wang, **Miaoqing Huang**, Vikram K. Narayana, and Tarek El-Ghazawi, "Scaling Scientific Applications on Clusters of Hybrid Multicore/GPU Nodes," in *Proceedings of The 8th ACM International Conference on Computing Frontiers (CF'11)*, Ischia, Italy, May 3-5, 2011.

C26 **Miaoqing Huang**, David Andrews, and Jason Agron, "Operating System Structures for Multiprocessor Systems on Programmable Chip," in *Proceedings of 2010 International Conference on ReConFigurable Computing and FPGAs (ReConFig 2010)*, Cancun, Mexico, Dec. 13-15, 2010.

C25 **Miaoqing Huang** and David Andrews, "Modular Design of Fully Pipelined Accumulators," in *Proceedings of The 2010 International Conference on Field-Programmable Technology (FPT'10)*, pp. 118-125, Beijing, China, Dec. 8-10, 2010.

C24 **Miaoqing Huang**, Lingyuan Wang, and Tarek El-Ghazawi, "Accelerating Double Precision Floating-point Hessenberg Reduction on FPGA and Multicore Architectures," in *Proceedings of 2010 Symposium on Application Accelerators in High Performance Computing (SAAHPC'10)*, Knoxville, Tennessee, USA, July 13-15, 2010.

C23 **Miaoqing Huang**, Olivier Serres, Vikram K. Narayana, Tarek El-Ghazawi, and Gregory Newby, "Efficient Cache Design for Solid-State Drives," in *Proceedings of The 7th ACM International Conference on Computing Frontiers (CF'10)*, pp. 41-50, Bertinoro, Italy, May 17-19, 2010.

C22 **Miaoqing Huang** and Ozlem Kilic, "Reaping the processing potential of FPGA on double-precision floating-point operations: an eigenvalue solver case study," in *Proceedings of the 18th Annual International IEEE Symposium on Field-Programmable Custom Computing Machines (FCCM 2010)*, pp. 95-102, Charlotte, North Carolina, USA, May 2-4, 2010.

C21 Ozlem Kilic and **Miaoqing Huang**, "Hardware Accelerated Design of Millimeter Wave Antireflective Surfaces", in *Proceedings of ACES 2010 Conference*, Tampere, Finland, April 25-29, 2010.

C20 Teng Li, **Miaoqing Huang**, Tarek El-Ghazawi, and H. Howie Huang, "Reconfigurable Active Disk: An FPGA Accelerated Storage Architecture for Data-Intensive Applications," in *Proceedings of 2009 Symposium on Application Accelerators in High-Performance Computing (SAAHPC'09)*, Urbana, Illinois, USA, July 27-31, 2009.

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C12 Tarek El-Ghazawi, Olivier Serres, Samy Bahra, **Miaoqing Huang** and Esam El-Araby, "Parallel Programming of High-Performance Reconfigurable Computing Systems with Unified Parallel C," in *Proceedings of the 4th Reconfigurable Systems Summer Institute, 2008 (RSSI'08)*, Urbana, Illinois, USA, July 7-9, 2008.

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C1 Hatim Diab, **Miaoqing Huang**, Kris Gaj, Tarek El-Ghazawi and Nikitas Alexandridis, "An automated pipeline balancing in the SRC Reconfigurable Computer and its application to the RC5 cipher breaking," in *Proceedings of 7th Military and Aerospace Programmable Logic Devices Conference (MAPLD 2004)*, Washington, DC, USA, Sept. 8-10, 2004.

Book Chapters (Total: 3)

B3 Xuan Shi and **Miaoqing Huang**, "GPGPU in GIS," in *Encyclopedia of GIS (Editors: Shashi Shekhar, Hui Xiong, Xun Zhou)*, Springer, December 2016.

B2 Xuan Shi and **Miaoqing Huang**, "MIC in GIS," in *Encyclopedia of GIS (Editors: Shashi Shekhar, Hui Xiong, Xun Zhou)*, Springer, December 2016.

B1 **Miaoqing Huang**, Liang Men, and Chenggang Lai, "Accelerating Mean Shift Segmentation Algorithm on Hybrid CPU/GPU Platforms," in *Modern Accelerator Technologies for Geographic Information Science (Editors: Xuan Shi, Volodymyr Kindratenko, Chaowei Yang)*, pp. 157-166, Springer, 2013.

Posters (Total: 3)

P3 Chenggang Lai and **Miaoqing Huang**, "A Performance Autotuning Framework on Hybrid Computer Clusters," *PhD Forum in the 28th IEEE International Parallel & Distributed Processing Symposium (IPDPS)*, Phoenix, AZ, USA, May 19-23, 2014.

P2 Sen Ma, Liang Men, and **Miaoqing Huang**, "Hybrid Scale-invariant Feature Transform (SIFT) Implementation on CPU/GPU," *Workshop on Electronic Structure Calculation Methods on Accelerators*, Oak Ridge National Lab, Oak Ridge, Tennessee, USA, Feb. 6-8, 2012. (**Best Poster Award**)

P1 **Miaoqing Huang**, Kris Gaj, Soonhak Kwon, and Tarek El-Ghazawi, "A New Hardware Architecture for the Montgomery Modular Multiplication Algorithm," *The 10th Workshop on Cryptographic Hardware and Embedded Systems 2008 (CHES 2008)*, Washington, DC, USA, August 10-13, 2008.

Talk

Fudan University **July 18, 2017**
"PolyPC: Polymorphic Parallel Computing Framework on Embedded Reconfigurable System"
Nanjing University of Aeronautics and Astronautics **July 3, 2014**
"Delay-based PUF Designs on FPGAs"
Nanjing University of Aeronautics and Astronautics **July 3, 2014**
"Modular Design of Fully Pipelined Reduction Circuits on FPGAs"
Nanjing University of Aeronautics and Astronautics **July 2, 2014**
"Achieve both performance and energy efficiencies on embedded heterogeneous systems"
Nanjing University of Aeronautics and Astronautics **July 2, 2014**
"Scalable communication infrastructure for embedded manycore systems"
NASA Ames Research Center, Moffett Field, CA **October 21, 2013**
"Comparison of Parallel Programming Models on Intel MIC Computer Cluster"
NASA Langley Research Center, Hampton, VA **July 26, 2013**
"Hardware Acceleration for High-Performance Computing"
National Center for Supercomputing Applications, UIUC **April 22, 2011**
"Scaling Scientific Applications on Clusters of Hybrid Multicore/GPU Nodes"
Computer Network Information Center, Chinese Academy of Sciences **Dec. 21, 2010**
"Scaling Scientific Applications on Clusters of Hybrid Multicore/GPU Nodes"
Workshop on High Performance Computing Application Acceleration **Oct. 22-23, 2010**
(Invitation Only)
"Research at University of Arkansas Regarding High Performance Computing"

Texas A&M University **March 26, 2010**
"Efficient Cache Design for Solid-State Drives"

Teaching

CSCE 2214 Computer Organization
CSCE 3513 Software Engineering
CSCE 3613 Operating Systems
CSCE 4643/5693 GPU Programming
CSCE 4783/5783 Cloud Computing & Security
CSCE 5013 Cloud Computing
CSCE 5013 Hardware/Software Co-design
CSCE 5013 Hardware Oriented Security
CSCE 5833 Computer Architecture Security
CSCE 5843 Reconfigurable Computing

Service to the Profession

Conference/Workshop Organizer

- ▷ Central Area Networking and Security Workshop (CANSec): Steering Committee Chair, 2022-2024
- ▷ 3rd IEEE International Conference on Autonomic Computing and Self-Organizing Systems (ACSOS): 2022 Registration Chair
- ▷ 2nd IEEE International Conference on Autonomic Computing and Self-Organizing Systems (ACSOS): 2021 Registration Chair
- ▷ 1st IEEE International Conference on Autonomic Computing and Self-Organizing Systems (ACSOS): 2020 Registration Chair
- ▷ 2020 International Conference on Field-Programmable Technology (FPT): 2020 Financial Chair
- ▷ 18th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid): 2018 Registration Chair
- ▷ 2nd IEEE International Conference on Fog and Edge Computing (ICFEC): 2018 Registration Chair
- ▷ 19th IEEE International Conference on High Performance Computing and Communications (HPCC): 2017 Registration Chair
- ▷ 15th IEEE International Conference on Smart City (SmartCity): 2017 Registration Chair
- ▷ 3rd IEEE International Conference on Data Science and Systems (DSS): 2017 Registration Chair
- ▷ Fifth Central Area Networking and Security Workshop (CANSec): 2014 General Chair
- ▷ ACS/IEEE International Conference on Computer Systems and Applications (AICCSA): 2011 Registration Chair
- ▷ Workshop on Multiprocessor Systems on (Programmable) Chips (MPSoC) as part of HPCS: 2011 Co-Chair

Editorial Board

- ▷ IEEE Transactions on Circuits and Systems II: Express Briefs, January 2022 - December 2023

Reviewer of Journals

- ▷ ACM: Transactions on Design Automation of Electronic Systems (TODAES)
- ▷ ACM: Transactions on Reconfigurable Technology and Systems (TRETS)
- ▷ Elsevier: Computers and Electrical Engineering

- ▷ Elsevier: Embedded Hardware Design (Microprocessors and Microsystems)
- ▷ Elsevier: Embedded Software Design (Journal of System Architecture)
- ▷ Elsevier: Future Generation Computer Systems
- ▷ Elsevier: Integration, the VLSI Journal
- ▷ Elsevier: Journal of Parallel and Distributed Computing
- ▷ Elsevier: Microelectronics Journal
- ▷ Elsevier: Parallel Computing
- ▷ Elsevier: Sustainable Computing
- ▷ ETRI Journal
- ▷ Hindawi: International Journal of Reconfigurable Computing, guest editor for special issue on high-performance reconfigurable computing
- ▷ Hindawi: Journal of Electrical and Computer Engineering
- ▷ Hindawi: VLSI Design
- ▷ IEEE: Access Journal
- ▷ IEEE: Antennas and Wireless Propagation Letters
- ▷ IEEE: Transactions on Circuits and Systems II
- ▷ IEEE: Transactions on Cloud Computing (TCC)
- ▷ IEEE: Transactions on Computers (TC)
- ▷ IEEE: Transactions on Parallel and Distributed Systems (TPDS)
- ▷ IEEE: Transactions on Very Large Scale Integration Systems (TVLSI)
- ▷ IET: Computers & Digital Techniques
- ▷ MDPI: Computers
- ▷ Plus One
- ▷ Springer: Journal of Cryptographic Engineering
- ▷ Springer: Journal of Supercomputing
- ▷ Taylor & Francis: International Journal of Geographical Information Science (IJGIS)
- ▷ The Arabian Journal for Science and Engineering
- ▷ The International Journal of Science & Technoledge
- ▷ Wiley: Concurrency and Computation: Practice and Experience
- ▷ Wiley: Transactions in GIS (TGIS))
- ▷ World Scientific: Journal of Circuits, Systems, and Computers

Technical Program Committee

- ▷ ACM Southeast Conference: 2012
- ▷ ACS/IEEE International Conference on Computer Systems and Applications (AICCSA): 2013
- ▷ Euromicro International Conference on Parallel, Distributed and Network-based Processing (PDP): 2015, 2016, 2017, 2018, 2019, 2020
- ▷ High Performance Computing & Simulation Conference (HPCS): 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021
- ▷ IEEE Computer Society Annual Symposium on VLSI (ISVLSI): 2018, 2019, 2020, 2021, 2022
- ▷ IEEE International Conference on Application-specific Systems, Architectures and Processors (ASAP): 2014
- ▷ IEEE International Conference on Embedded Software and Systems (ICESS): 2011, 2012, 2013
- ▷ IEEE International Conference on Field-Programmable Technology (FPT): 2016, 2017, 2018, 2019, 2020
- ▷ IEEE International Conferences on High Performance Computing and Communications (HPCC): 2018, 2019, 2020, 2022
- ▷ IEEE International Conference on Pervasive Intelligence and Computing (PICom): 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022

- ▷ IEEE International Conference on Scalable Computing and Communications (ScalCom): 2018, 2019, 2020
- ▷ IEEE International Symposium on Circuits and Systems (ISCAS): 2011, 2013
- ▷ IEEE International Symposium on Field-Programmable Custom Computing Machines (FCCM): 2016, 2017, 2018, 2020, 2021, 2022
- ▷ International Conference on Advanced Communications and Computation (INFOCOMP): 2018
- ▷ International Conference on Computer Engineering & Systems (ICCES): 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019
- ▷ International Conference on Control, Decision and Information Technologies (CoDIT): 2013
- ▷ International Conference on Field-Programmable Logic and Applications (FPL): 2016, 2017, 2018
- ▷ International Conference on Information Processing and Wireless Systems (IP-WiS): 2013
- ▷ International Conference on ReConFigurable Computing and FPGAs (ReConFig): 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019
- ▷ International Conference on Systems and Informatics (ICSAI): 2012
- ▷ International Workshop on Dynamic Reconfigurable Network-on-Chip (DRNoC) as part of HPCS: 2012, 2013, 2014
- ▷ International Workshop on Embedded and Reconfigurable Computing (ERC) as part of HPCS: 2010
- ▷ International Workshop on High Performance Interconnection Networks (HPIN) as part of HPCS: 2014
- ▷ International Workshop on High Performance Interconnection Networks and Interconnects (HPINI) as part of HPCS: 2018
- ▷ International Workshop on High-Performance Reconfigurable Computing Technology and Applications (HPRCTA) as part of SC: 2010
- ▷ International Workshop on Modern Accelerator Technologies for GIScience (MAT4GIScience) as part of GIScience: 2012
- ▷ International Workshop on Multiprocessor Systems on (Programmable) Chips (MPSoC) as part of HPCS: 2011
- ▷ Supercomputing (SC): Doctoral Showcase Committee: 2011, 2015
- ▷ Symposium on Application Accelerators in High Performance Computing (SAAHPC): 2011, 2012

Grant Review Panelist

- ▷ National Science Foundation: 2014, 2015, 2019, 2020, 2021, 2022, 2023, 2024
- ▷ Department of Energy: 2021

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