Weiwen Jiang

Assistant Professor
Electrical and Computer Engineering Department
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Employment

George Mason University   AUG 2021 – NOW. VIGINIA, U.S.
- **Assistant Professor in the Electrical and Computer Engineering Department**

University of Notre Dame (PI: Dr. Yiyu Shi)   JUNE 2019 – AUG 2021. NOTRE DAME, U.S.
- **Postdoctoral Researcher in the Department of Computer Science and Engineering**. Focus on the co-exploration of neural architectures and hardware design, including qauntum computer.

University of Notre Dame (Dr. Jay Brockman)   JAN. 2020 – MAY 2020 NOTRE DAME, U.S.
- **Teaching Assisitant**. CSE20221, Logical Design and Sequential Circuit.

East China Normal University   APR. 2019 – APR. 2020 SHANGHAI, CHINA
- **Guest Research Fellows** in Big Data and Intelligent System Lab.

Education

University of Pittsburgh (PI: Dr. Jingtong Hu)   OCT. 2017 – JUNE 2019 PITTSBURGH, U.S.
- **Joint Ph.D. program in the Department of Electrical and Computer Engineering**. Focus on the co-exploration of neural architecture and hardware design.

Chongqing University (Advisor: Dr. Edwin Sha)   SEPT. 2013 – JUNE 2019 CHONGQING, CHINA
- **Ph.D. degree in Computer Science**. Focus on the embedded system design and optimizations: designing high-performance and low-cost heterogeneous pipelining systems.

Nanjing Agriculture University   SEPT. 2008 – JUNE 2012. JIANGSU, CHINA
- **Bachelor degree in Computer Science**. Major in Network Engineering.

Awards

Best Poster Award in ORNL's Quantum Computing User Forum 2023	07/2023
ACM/IEEE DAC Richard Newton Young Student Fellow Award (Student: Zhirui Hu)	07/2023
LANL Quantum Computing Summer School Fellowship (Student: Zhirui Hu)	SUMMER 2023
Best Poster Award in the Student Research Forum at ASP-DAC 2023 (Student: Yi Sheng)	01/2023
Second Place at 32th ACM SIGDA University Demonstration (2 out of 10 teams)	07/2022
IEEE TCAD Donald O. Pederson Best Paper Award (2 out of 1000+ submissions)	12/2021
First Place at 31th ACM SIGDA University Demonstration (1 out of 11 teams)	12/2021

Hackathon Top Winning Award at IEEE SERVICES 2020 (2 out of 10 teams)	12/2020
Best Paper Nomination at ASP-DAC 2020 (12 out of 263 submissions)	01/2020. BEIJING
Best Paper Nomination at CODES+ISSS 2019 (3 out of 74 submissions)	10/2019. NEW YORK
Best Paper Nomination at DAC 2019 (5 out of 815 submissions)	06/2019. LAS VEGAS
Best Paper Award at ICCD 2017 (5 out of 258 submissions)	11/2017. BOSTON
Best Student Paper at ESTC 2017	11/2017. CHINA
Best Paper Nomination at ASP-DAC 2016	01/2016. MACAO
Best Paper Award at NVMSA 2015	08/2015. HONGKONG
Editor's pick of the year 2016 in IEEE TC	12/2016. USA
China National Scholarship (1% among all postgraduate students)	11/2017. CHINA

Research Grants or Gifts

- *Total Fund:* Total amount: $1,468,651$; **Jiang's share:** $1,065,309$
  - *External Fund:* Total amount: $1,298,349$; **Jiang's share:** $900,007$
  - *Internal Fund:* Total amount: $68,000$; **Jiang's share:** $63,000$
  - *In-kind Fund:* Total amount: $102,302$; **Jiang's share:** $102,302$

External Fund @ Mason:

"Collaborative Research: OAC Core: An Integrated Framework for Enabling Temporal-Reliable Quantum Learning on NISQ-era Devices"
    Duration: 08/01/2023-07/31/2026
    Fund Source: National Science Foundation (NSF)
    Status: Active
    Fund Amount: $600,000 (Credit: 55.00%; **$330,000**)
    Role: Lead PI
    Collaborators: Qiang Guan @ Kent State University (Site PI)

"CyberTraining: Pilot: Quantum Research Workforce Development on End-to-End Quantum Systems Integration"
    Duration: 09/01/2023-08/30/2025
    Fund Source: National Science Foundation (NSF)
    Status: Active
    Fund Amount: **$300,000**
    Role: Lead PI
    Collaborators: Jessica Rosenberg @ Mason (Co-PI); Mingzhen Tian @ Mason (Co-PI)

"ARO: DURIP: Wideband Realtime Millimeter-Wave Networking and Security with Reconfigurable Intelligent Surfaces"
    Duration: 02/01/2024-01/31/2025
    Fund Source: Army Research Office (ARO)
    Status: Funded/Active
    Fund Amount: $250,000 (Credit: 33.33%; **$83,333**)
    Role: Co-PI
    Collaborators: Kai Zeng @ Mason (Lead PI); Brian Mark @ Mason (Co-PI)

"Computational Security for Cloud-Based Quantum Machine Learning"
    Duration: 10/06/2022-10/05/2023
    Fund Source: Leidos
    Status: Active
    Fund Amount: **$10,000**
    Role: Sole PI

"Intelligent Quantum Sensing with Quantum Neural Networks"
    Duration: 01/01/2022-12/31/2022
    Status: Completed
    Fund Source: US Department of Energy / Los Alamos National Lab)
    Fund Amount: $90,000 (Credit: 44.44%; **$40,000**)
    Role: Mason Site PI
    Collaborators: Youzuo Lin @ LANL (Lead PI); Lei Yang @ University of New Mexico (Site PI)

External Fund @ Notre Dame:

"I/UCRC: Software Defined FPGA Hardware and Co-Exploration for Real-Time Applications"
    Duration: 10/01/2019-09/30/2020
    Status: Completed
    Fund Source: National Science Foundation (Collaborated with EdgeCortix Inc.)
    Fund Amount: $100,000 (Credit: 50.00%; **$50,000**)
    Role: Lead PI
    Collaborators: Yiran Chen @ Duke University (Co-PI)

"RAPID: Collaborative Research: Independent Component Analysis Inspired Statistical Neural Networks for 3D CT Scan Based Edge Screening of COVID-19"
    Duration: 07/01/2020 - 06/30/2021
    Status: Completed
    Fund Source: National Science Foundation
    Fund Amount: $98,349 (Credit: 50.00%; **$49,174**)
    Role: Co-PI
    Collaborators: Yiyu Shi @ University of Notre Dame (Lead PI)

"Hardware/Software Co-Exploration of Multi-Modal Neural Architectures Targeting AR/VR Glasses"
    Duration: 04/01/2020 - 04/01/2021
    Status: Completed
    Fund Source: Facebook
    Fund Amount: $75,000 (Credit: 50.00%; **$37,500**)
    Role: Co-PI
    Collaborators: Yiyu Shi @ University of Notre Dame (Lead PI)

Internal Fund @ Mason:

"Towards an Efficient, Secure and Robust Quantum Neural Network for Drug Discovery via a Full Design Stack Exploration"
    Duration: 09/01/2022 - 02/28/2024
    Status: Active
    Fund Source: George Mason University
    Fund Amount: **$50,000**
    Role: Lead PI
    Collaborators: Kenneth Foreman @ Mason; Mikell Paige @ Mason; Jason Cong @ UCLA

"Hardware Efficient Quantum Circuit for Quantum Dynamics Simulation in Condensed Phases using Machine Learning Approach"
> *Duration:* 05/21/2023 - 08/20/2023
> *Status:* Active
> *Fund Source:* Quantum Science and Engineering Center
> *Fund Amount:* $10,000 (Credit: 50.00%; **$5,000**)
> *Role:* Co-PI
> *Collaborators:* Fei Wang @ Mason (Lead PI)

"Refresh and Recycle of Quantum Neural Networks on the Near-Term Noisy Quantum Processors"
> *Duration:* 05/24/2022 - 08/27/2022
> *Status:* Complete
> *Fund Source:* Quantum Science and Engineering Center
> *Fund Amount:* **$8,000**
> *Role:* Sole PI

In-kind Fund @ Mason:

"A Co-Design Framework for Quantum Learning on Near-Term Unstable Quantum Devices"
> *Duration:* 08/21/2023 - 05/21/2024
> *Status:* Active
> *Fund Source:* Quantum Science and Engineering Center
> *Program:* Graduate Research Fellowship (GRF) (Student: Zhirui Hu)
> *Fund Amount:* **$31,507**
> *Role:* PI

"Quantum Computing Summer School Fellowship"
> *Duration:* 06/05/2023 - 08/11/2023
> *Status:* Active
> *Fund Source:* Los Alamos National Laboratory
> *Program:* Summer School Fellowship (Student: Zhirui Hu)
> *Fund Amount:* **$15,760**
> *Role:* PI

"Exploring and Optimizing Nonlinearity in Quantum Circuits for Enhanced Machine Learning Capabilities"
> *Duration:* 05/21/2023 - 08/20/2023
> *Status:* Active
> *Fund Source:* Quantum Science and Engineering Center
> *Program:* Transdisciplinary Centers' Summer Fellowships (Student: Jinyang Li)
> *Fund Amount:* **$8,000**
> *Role:* Sole PI

"Preserving Data and Computation Security in Cloud-based Quantum Learning"
> *Duration:* 08/27/2022 - 08/20/2023
> *Status:* Active
> *Fund Source:* Quantum Science and Engineering Center
> *Program:* Graduate Research Fellowship (GRF) (Student: Zhepeng Wang)
> *Fund Amount:* **$30,412**
> *Role:* Sole PI

"Quantum Neural Network Design and Optimization"
> *Fund Source:* Microsoft Azure Quantum

Fund Amount: Access to Microsoft Azure Quantum Cluod (**$9,000**)
Role: Sole PI

"Neural Network Acceleration on FPGA"
Fund Source: Xilinx
Fund Amount: Xilinx Alveo U280 Data Center Accelerator (**$7,623**)
Role: Sole PI

"Quantum Neural Networks on Unstable Near-Term Noisy Quantum Processors"
Fund Source: Oak Ridge National Lab
Resource: Access to IBM, Quantinuum, IonQ Quantum Computers
Role: Sole PI

Pending:

"Conference: DESC: Type III: NSF Workshop on Sustainable, Scalable, Efficient, and Accurate Simulation of Quantum Computation (QuSea)"
Fund Source: National Science Foundation (NSF)
Status: Pending
Fund Amount: **$100,000**
Role: Lead PI
Subawardees: Qiang Guan @ KSU, Dingwen Tao @ Indiana University

Media Coverage

- **TCAD Best Paper Award**, George Mason University, Xinzhiyuan and Chongqing University, also cited in Sohu, Tencent, 163, BAAI, Baidu.
- **QF-Mixer, QF-RobustNN, and QFNN**, Reported in Xinzhiyuan and Chongqing University, also cited in 51CTO, Sina, 163, Tencent, Yidianzixun.
- **QuantumFlow V2**, Reported in Xinzhiyuan, also cited in Tencent, Sohu, Sina, Zhuanzhi, 163.
- **QuantumFlow V1**, Reported in Xinzhiyuan, also cited in Tencent, Sina, 51CTO, Zhuanzhi.
- **IEEE Hackathon Top Winning Award**, Reported in University of Notre Dame.
- **AI for COVID CT Screening**, Reported in The OBSERVER news.

Teaching Experience

Hardware Accelerators for Machine Learning (In-Person, ECE618)   2023. GEORGE MASON UNIV.
Rating on Student Participation: **4.59**/**5**.
Rating on Learning Outcomes: **4.73**/**5**.
Rating on Course Environment: **4.75**/**5**.
Rating on Instructor Preparation and Course Organization: **4.64**/**5**.

Hardware Accelerators for Machine Learning (Online, ECE618)   2023. GEORGE MASON UNIV.
Rating on Student Participation: **4.33**/**5**.
Rating on Learning Outcomes: **4.61**/**5**.
Rating on Course Environment: **4.73**/**5**.
Rating on Instructor Preparation and Course Organization: **4.70**/**5**.

Machine Learning for Embedded Systems (Lecturer, ECE554)   2022. GEORGE MASON UNIV.
Rating on Student Participation: **4.47**/**5**.
Rating on Learning Outcomes: **4.72**/**5**.
Rating on Course Environment: **4.78**/**5**.
Rating on Instructor Preparation and Course Organization: **4.76**/**5**.

Hardware Accelerators for Machine Learning (Lecturer, ECE618)   2022. GEORGE MASON UNIV.
  Rating on Student Participation: **4.36/5**.
  Rating on Learning Outcomes: **4.64/5**.
  Rating on Course Environment: **4.65/5**.
  Rating on Instructor Preparation and Course Organization: **4.71/5**.

Machine Learning for Embedded Systems (Lecturer, ECE499/590)   2021. GEORGE MASON UNIV.
  Rating on teaching: **4.55/5** (department: 4.15/5).
  Rating on course: **4.50/5** (department: 4.06/5) [newly developed course].

IBM Qiskit Training Course for Quantum Computing (Lecturer for QML) 2021. UNIV. OF NOTRE DAME

Machine Learning for Embedded Systems (TA, CSE60685)   2020. UNIV. OF NOTRE DAME

Logic Design and Sequential Circuits (TA, CSE20221)   2020. UNIV. OF NOTRE DAME

INVESTING NOW summer program (Volunteer)   JULY 2018. UNIV. OF PITTSBURGH.

High-Performance Parallel Computing (TA for Dr. Edwin Sha)   2014 – 2015. CHONGQING UNIV.

JQub's Students (Current)

- Yi Sheng, 2021-Now. (Ph.D. student at George Mason University)
  - *Three first-author papers: Two at ACM/IEEE DAC, and one at ASP-DAC.*
  - *Best Poster Award in the Student Research Forum at ASP-DAC 2023.*
- Zhepeng Wang, 2021-Now. (Ph.D. student at George Mason University)
  - *Two first-author papers at ACM/IEEE ICCAD and IEEE QuantumWeek.*
  - *Intern at Los Alamos National Lab.*
  - *2022 Quantum Science and Engineering Center (QSEC) Graduate Research Fellowship.*
- Junhuan Yang, 2021-Now. (Dr. Yang's Ph.D. student at George Mason University)
  - *First-author papers: ACM/IEEE DAC, ISVLSI, AutoML-Conf.*
  - *Intern at Los Alamos National Lab.*
- Zhirui Hu, 2022-Now. (Ph.D. student at George Mason University)
  - *Four first-author papers at DAC, ICCAD, ICCD, and QuantumWeek.*
  - *2023 LANL Quantum Computing Summer School Fellowship.*
  - *2023 ACM/IEEE DAC Richard Newton Young Student Fellow Award.*
  - *2023 Quantum Science and Engineering Center (QSEC) Graduate Research Fellowship.*
- Jinyang Li, 2022-Now. (Ph.D. student at George Mason University)
  - *One first-author paper at IEEE QuantumWeek.*

Mentor of Students (Past)

- Zhding Liang, 2021-2022 (Co-Advised Ph.D. student at the Univerity of Notre Dame)
- Yuhong Song, 2020-2021. (Ph.D. student at East China Normal University) [45]
- Panjie Qi, 2020-2021. (Master student at East China Normal University)
- Zhuorui Zhao, 2020-2021. (Ph.D. candidate at the University of Notre Dame)
- Colin McDonald, 2020-2021. (CS Junior at the University of Notre Dame, Quantum ML)
- Zheyu Yan, 2019-2021. (Ph.D. candidate at the University of Notre Dame) [12][53]
- Matthew Coffey, Nov. 2020-Jan. 2021. (CS Senior at the University of Notre Dame, Quantum ML)
- Qing Lu, 2018-2021. (Ph.D. candidate at the University of Notre Dame) [54][57]

- Hanjing Zhu, Jun. 2020-Sept. 2020. (Undergraduate student at the University of Notre Dame)
- Alicia Hu, Feb. 2018- May 2018. (Undergraduate student at the University of Pittsburgh)
- Xinyi Zhang, 2017-Dec. 2020. (Ph.D. candidate at the University of Pittsburgh) [3][4][56]
- Hailiang Dong (Master at Chongqing University) [5][16][59][64][65], First Employment: Ph.D. Candidate at the University of Texas at Dallas
- Xinchi Li (Master at Chongqing University) [65], First Employment: Tencent in Chengdu
- Yutong Liang (Master at Chongqing University) [66], First Employment: PingCAP Inc. in Beijing
- Zhulin Ma (Ph.D. candidate at Chongqing University) [16]

Publications

Five Representative Papers

[1] **W. Jiang**, J. Xiong, and Y. Shi, "A Co-Design Framework of Neural Networks and Quantum Circuits Towards Quantum Advantage", **Nature Communications**, 12(1): 1-13, 2021.

[2] **W. Jiang**, L. Yang, E. H.-M Sha, Q. Zhuge, S. Gu, S. Dasgupta, Y. Shi and J. Hu, "Hardware/Software Co-Exploration of Neural Architectures", *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (**TCAD**), Mar. 2020* (**2021 Donald O. Pederson Best Paper Award, 1 of the 2 selected from all the submissions at TCAD in the past 2 years**)

[3] **W. Jiang**, X. Zhang, E. H.-M. Sha, L. Yang, Q. Zhuge, Y. Shi, and J. Hu, "Accuracy vs. Efficiency: Achieving Both through FPGA-Implementation Aware Neural Architecture Search," *Proc. Design Automation Conference (**DAC**)*, Las Vegas, NV, USA, June. 2019. (5 out of 815 submissions, **Best Paper Nomination**)

[4] **W. Jiang**, E. H.-M. Sha, X. Zhang, L. Yang, Q. Zhuge, Y. Shi, and J. Hu, "Achieving Super-Linear Speedup across Multi-FPGA for Real-Time DNN Inference", International Conference on Hardware/Software Co-design and System Synthesis (CODE+ISSS@New York), also appears at ACM Transactions on Embedded Computing Systems (TECS), 2019. (3 out of 74 submissions, **Best Paper Nomination**)

[5] **W. Jiang**, E. H.-M. Sha, Q. Zhuge, L. Yang, H. Dong and X. Chen, "On the Design of Minimal-Cost Pipeline Systems Satisfying Hard/Soft Real-Time Constraints," *IEEE International Conference on Computer Design (**ICCD@Boston**)* and *in IEEE Transactions on Emerging Topics in Computing (**TETC**), Jan. 2018.* (5 out of 258 submissions, **Best Paper Award**)

Under Review and Work-in-Progress Papers

[6] **W. Jiang**, Y. Ding, and Y. Shi, "Universal Approximability of Deep Learning in Hybrid Quantum-Classical Computing", submitted to Journal of Machine Learning.

[7] **J. Li**, Q. Guan, D. Tao, **W. Jiang**, "Carbon Emissions of Quantum Circuit Simulation: More than You Would Think", submitted to IGSC.

[8] **Y. Sheng**, J. Yang, Z. Wang, **W. Jiang**, Q. Lou, L. Yang, "Distribution-Guided Fairness Calibration in Learning", Submit to AAAI.

Journal Papers

[9] Y. Ding, **W. Jiang**, Q. Lou, J. Liu, J. Xiong, X. Sharon Hu, X. Xu, and Y. Shi, "The Impact of Neural Networks' Competency-Awareness on Hardware Design", accepted by **Nature Electronics**, Aug. 2020

[10] **W. Jiang**, B. Xie, C-C Liu and Y. Shi, "Integrating Memristors and CMOS for Better AI", accepted by **Nature Electronics**, Sept. 2019

[11] **W. Jiang**, L. Yang, S. Dasgupta, J. Hu, and Y. Shi, "Standing on the Shoulders of Giants: Hardware and Neural Architecture Co-Search with Hot Start", Accepted by International Conference on Hardware/Software Co-design and System Synthesis (CODE+ISSS), also appear at IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (**TCAD**), 2020. *(acceptance rate 94/375=25.1%)*

[12] **W. Jiang**, Q. Lou, Z. Yan, L. Yang, J. Hu, X. Hu, and Y. Shi, "Device-Circuit-Architecture Co-Exploration for Computing-in-Memory Neural Accelerators", *IEEE Transactions on Computers (**TC**), Apr. 2020.*

[13] **W. Jiang**, E. H.-M. Sha, Q. Zhuge, L. Yang, X. Chen and J. Hu, "Heterogeneous FPGA-based Cost-Optimal Design for Timing-Constrained CNNs", *accepted by CASES 2018 (in ESWEEK) and appear in IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (**TCAD**).* *(acceptance rate 67/270=24.8%)*

[14] **W. Jiang**, E. H.-M. Sha, Q. Zhuge, L. Yang, X. Chen and J. Hu, "On the Design of Time-Constrained and Buffer-Optimal Self-Timed Pipelines", *in IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (**TCAD**),* May 2018.

[15] **W. Jiang**, E. H.-M. Sha, X. Chen, L. Yang, L. Zhou and Q. Zhuge, "Optimal Functional-Unit Assignment for Heterogeneous Systems under Timing Constraint," *in IEEE Transactions on Parallel and Distributed Systems (**TPDS**),* 28(9): 2567-2580, 2017.

[16] E. H.-M. Sha, **W. Jiang**, H. Dong, Z. Ma, R. Zhang, X. Chen and Q. Zhuge, "Towards the Design of Efficient and Consistent Index Structure with Minimal Write Activities for Non-Volatile Memory", *in IEEE Transactions on Computers (**TC**),* 67(3): 432-448, 2018.

[17] **W. Jiang**, E. H.-M. Sha, Q. Zhuge and Lin Wu, "Efficient Assignment Algorithms to Minimize Operation Cost for Supply Chain Networks in Agile Manufacturing," *in Computers & Industrial Engineering,* 108: 225-239, 2017.

[18] **W. Jiang**, E. H.-M. Sha, X. Chen, L. Wu and Q. Zhuge, "Synthesizing Distributed Pipelining Systems with Timing Constraints via Optimal Functional Unit Assignment and Communication Selection," *in Journal of Computational Science,* 26: 332-343, 2018.

[19] **W. Jiang**, Q. Zhuge, X. Chen, L. Yang, J. Yi, and E. H.-M. Sha, "Properties of Self-Timed Ring Architectures for Deadlock-Free and Consistent Configuration Reaching Maximum Throughput," *in Journal of Signal Processing Systems,* 84(1): 123-137, 2016.

[20] W. Liu, L. Yang, **W. Jiang**, L. Feng, N. Guan, W. Zhang, and N. Dutt, "Thermal-aware Task Mapping on Dynamically Reconfigurable Network-on-Chip based Multiprocessor System-on-Chip", *in IEEE Transactions on Computers (**TC**),* 2018.

[21] L. Yang, W. Liu, **W. Jiang**, M. Li, P. Chen and E. H.-M. Sha, "FoToNoC: A Folded Torus-Like Network-on-Chip based Many-Core Systems-on-Chip in the Dark Silicon Era," *in IEEE Transactions on Parallel and Distributed Systems,* Dec. 2016.

[22] L. Yang, W. Liu, **W. Jiang**, M. Li, J. Yi and E. H. M. Sha, "Application Mapping and Scheduling for Network-on-Chip-Based Multiprocessor System-on-Chip With Fine-Grain Communication Optimization" *IEEE Transactions on Very Large Scale Integration Systems,* 24(10): 3027-3040, Oct. 2016.

[23] E. H.-M. Sha, X. Chen, Q. Zhuge, L. Shi and **W. Jiang**, "A New Design of In-Memory File System Based on File Virtual Address Framework," *in IEEE Transactions on Computers,* 65(10):2959-2972, Oct. 2016.

[24] X. Chen, E. H.-M. Sha, Q. Zhuge, C. J. Xue, **W. Jiang** and Y. Wang, "Efficient data placement for improving data access performance on domain-wall memory" *IEEE Transactions on Very Large Scale Integration (VLSI) Systems,* 24(10): 3094-3104, 2016.

Conference Papers

[25] **Z. Hu**, R. Wolle, M. Tian, Q. Guan, T. Humble, **W. Jiang**, "Toward Consistent High-fidelity Quantum Learning on Unstable Devices via Efficient In-situ Calibration", Accepted by IEEE QuantumWeek'23 (**Rank No. 2 out of 70 submissions in the Tack**).

[26] **Z. Wang, J. Li, Z. Hu**, B. Gage, E. Iwasawa, **W. Jiang**, "QuMoS: A Framework for Preserving Security of Quantum Machine Learning Model", Accepted by IEEE QuantumWeek'23.

[27] **J. Li, Z. Wang, Z. Hu**, P. Date, A. Li, **W. Jiang**, "A Novel Spatial-Temporal Variational Quantum Circuit to Enable Quantum Deep Learning on NISQ Devices", Accepted by IEEE QuantumWeek'23.

[28] P. Senapati, **Z. Wang**, **W. Jiang**, T. Humble, B. Fang, S. Xu, Q. Guan, "Towards Redefining the Reproducibility in Quantum Computing: A Data Analysis Approach on NISQ Devices", Accepted by IEEE QuantumWeek'23.

[29] **Z. Hu**, Y. Lin, Q. Guan, **W. Jiang**, "Battle Against Fluctuating Quantum Noise: Compression-Aided Framework to Enable Robust Quantum Neural Network", Accepted by DAC'23 (**Rank No. 1 in the Tack**).

[30] **Y. Sheng**, J. Yang, L. Yang, Y. Shi, J. Hu, **W. Jiang**, "Muffin: A Framework Toward Multi-Dimension AI Fairness by Uniting Off-the-Shelf Models", Accepted by DAC'23.

[31] J. Yang, **Y. Sheng**, Y. Zhang, **W. Jiang**, L. Yang, "On-Device Unsupervised Image Segmentation", Accepted by DAC'23 (**Rank No. 1 in the Tack**).

[32] **Y. Sheng**, J. Yang, **W. Jiang**, L. Yang, "Toward Fair and Efficient Hyperdimensional Computing", In Proceedings of the 28th Asia and South Pacific Design Automation Conference (ASP-DAC), pp. 612-617.

[33] Z. Hu, J. Li, Z. Pan, S. Zhou, L. Yang, C. Ding, O. Khan, T. Geng and **W. Jiang**, "On the Design of Quantum Graph Convolutional Neural Network in the NISQ era and beyond", In 2022 IEEE 40th International Conference on Computer Design (ICCD), page 290-297. IEEE, 2022

[34] W. Mu, Y. Mao, L. Cheng, Q. Wang, **W. Jiang**, and P. Chen, "Iterative qubits management for quantum index searching in a hybrid system", In 2022 IEEE 41th International Performance Computing and Communications Conference (IPCCC), pages 1-7. IEEE, 2022.

[35] S. Ruan, Y. Wang, **W. Jiang**, Y. Mao, and Q. Guan, "Vacsen: A visualization approach for noise awareness in quantum computing", In 2022 IEEE 12th Symposium on Large Data Analysis and Visualization (LDAV), pages 12-22. IEEE, 2022.

[36] Z. Hu, P. Dong, Z. Wang, Y. Lin, Y. Wang, and **W. Jiang**, "Quantum neural network compression", In 2022 IEEE/ACM International Conference on Computer-Aided Design (ICCAD), pages 1-8. IEEE, 2022.

[37] Z. Liang, H. Wang, J. Cheng, Y. Ding, H. Ren, X. Qian, S. Han, **W. Jiang**, Y. Shi, "Variational quantum pulse learning", In 2022 IEEE international conference on quantum computing and engineering (QCE), pages 1-10. IEEE, 2022.

[38] Y. Sheng, J. Yang, Y. Wu, Y. Shi, J. Hu, **W. Jiang**, L. Yang, "The Larger The Fairer? Small Neural Networks Can Achieve Fairness for Edge Devices", Accepted by DAC'22.

[39] H. Peng, S. Huang, S. Chen, B. Li, T. Geng, A. Li, **W. Jiang**, W. Wen, J. Bi, H. Liu and C. Ding, "A Length Adaptive Algorithm-Hardware Co-design of Transformer on FPGA Through Sparse Attention and Dynamic Pipelining", Accepted by DAC'22.

[40] B. Lu, J. Yang, **W. Jiang**, Y. Shi and S. Ren, "One Proxy Device Is Enough for Hardware-Aware Neural Architecture Search" *Proc. of ACM SIGMETRICS/Performance, 2022*

[41] S. Chang, Y. Li, M. Sun, **W. Jiang**, S. Liu, Y. Wang, and X. Lin, "RMSMP: A Novel Deep Neural Network Quantization Framework with Row-wise Mixed Schemes and Multiple Precisions" *Proc. of 2021 IEEE/CVF International Conference on Computer Vision (**ICCV**)*

[42] W. Niu, Z. Kong, G. Yuan, **W. Jiang**, J. Guan, C. Ding, P. Zhao, S. Liu, B. Ren, Y. Wang, "A Compression-Compilation Framework for On-mobile Real-time BERT Applications", *Demo Paper at International Joint Conference on Artificial Intelligence (IJCAI-21)*

[43] Z. Wang, Z. Liang, S. Zhou, C. Ding, J. Xiong, Y. Shi, **W. Jiang**, "Exploration of Quantum Neural Architecture by Mixing Quantum Neuron Designs" *Proc. of IEEE/ACM International Conference on Computer-Aided Design (ICCAD)*, 2021 (Invited Paper)

[44] Z. Liang, Z. Wang, J. Yang, L. Yang, J. Xiong, Y. Shi, **W. Jiang**, "Can Noise on Qubits Be Learned in Quantum Neural Network? A Case Study on QuantumFlow" *Proc. of IEEE/ACM International Conference on Computer-Aided Design (ICCAD)*, 2021 (Invited Paper)

[45] Y. Song, **W. Jiang**, B. Li, Q. Zhuge, E. H.-M. Sha, S. Dasgupta, Y. Shi, C. Ding, "Dancing along Battery: Enabling Transformer with Run-time Reconfigurability", *Proc. Design Automation Conference DAC-21*.

[46] D. Manu, Y. Sheng, J. Yang, J. Deng, T. Geng, A. Li, C. Ding, **W. Jiang**, L. Yang, "FL-DISCO: Federated Generative Adversarial Network for Graph-based Molecule Drug Discovery", *Proc. of IEEE/ACM International Conference on Computer-Aided Design (ICCAD)*, 2021 (Invited Paper)

[47] H. Peng, S. Chen, Z. Wang, J. Yang, S. A. Weitze, T. Geng, A. Li, J. Bi, M. Song, **W. Jiang**, H. Liu, C. Ding, "Optimizing FPGA-based Accelerator Design for Large-Scale Molecular Similarity Search", *Proc. of IEEE/ACM International Conference on Computer-Aided Design (ICCAD)*, 2021 (Invited Paper)

[48] Y. Zhang, Y. Fu, **W. Jiang**, C. Li, H. You, M. Li, V. Chandra, and Y. Lin, "DIAN: Differentiable Accelerator-Network Co-Search Towards Maximal DNN Efficiency", Proc. of ACM/IEEE International Symposium on Low Power Electronics and Design (ISLPED)

[49] **W. Jiang**, J. Xiong and Y. Shi, "When Machine Learning Meets Quantum Computers: A Case Study," *Proc. of IEEE/ACM Asia and South Pacific Design Automation Conference (ASP-DAC))*, 2021 (Invited Paper)

[50] D. Zeng, **W. Jiang**, T. Wang, X. Xu, H. Yuan, M. Huang, J. Zhuang, J. Hu, and Y. Shi, "Towards Cardiac Intervention Assistance: Hardware-Aware Neural Architecture Exploration for Real-Time 3D Cardiac Cine MRI Segmentation," *Proc. of IEEE/ACM International Conference on Computer-Aided Design (ICCAD)*, 2020 (Invited Paper)

[51] S. Bian, X. Xu, **W. Jiang**, Y. Shi and T. Sato, "BUNET: Blind Medical Image Segmentation Based on Secure UNET", *Proc. Medical Image Computing and Computer Assisted Interventions (MICCAI)*, Lima, Peru, 2020
(acceptance rate 30%)

[52] X. Yan, **W. Jiang**, Y. Shi and C. Zhuo, "MS-NAS: Multi-Scale Neural Architecture Search for Medical Image Segmentation", *Proc. Medical Image Computing and Computer Assisted Interventions (MICCAI)*, Lima, Peru, 2020
(acceptance rate 30%)

[53] L. Yang, Z. Yan, M. Li, H. Kwon, L. Lai, T. Krishna, V. Chandra, **W. Jiang**, Y. Shi, "Co-Exploration of Neural Architectures and Heterogeneous ASIC Accelerator Designs Targeting Multiple Tasks", *Proc. Design Automation Conference (DAC)*, San Francisco, July 19-23.
(acceptance rate 228/992=23.0%)

[54] S. Bian, **W. Jiang**, Q. Lu, Y. Shi, and T. Sato, "NASS: Optimizing Secure Inference via Neural Architecture Search", *24th European Conference on Artificial Intelligence (ECAI'20)*
(acceptance rate 365/1363=26.8%)

[55] L. Yang, **W. Jiang**, W. Liu, E. H.-M. Sha, Y. Shi, and J. Hu, "Co-Exploring Neural Architecture and Network-on-Chip Design for Real-Time Artificial Intelligence," *Proc. Asia and South Pacific Design Automation Conference (ASP-DAC)*, Beijing, Jan. 2020. (12 out of 263 submissions, **Best Paper Nomination**)

[56] X. Zhang, **W. Jiang**, Y. Shi and J. Hu, "When Neural Architecture Search Meets Hardware Implementation: from Hardware Awareness to Co-Design," *Proc. IEEE Computer Society Annual Symposium on VLSI (ISVLSI)*, Miami, Florida, USA, Aug. 2019. (Invited Paper)

[57] Q. Lu, **W. Jiang**, X. Xiao, J. Hu and Y. Shi, "On Neural Architecture Search for Resource-Constrained Hardware Platforms," *Proc. IEEE/ACM International Conference On Computer-Aided Design (IC-CAD)*, Westminster, CO, 2019. (Invited paper)

[58] **W. Jiang**, E. H.-M. Sha, Q. Zhuge and X. Chen, "Optimal Functional-Unit Assignment and Buffer Placement for Probabilistic Pipelines," *Proc. International Conference on Hardware/Software Co-design and System Synthesis (CODES+ISSS)*, Pittsburgh, PA, USA, Oct. 2016.
(acceptance rate 21/80=26.3%)

[59] **W. Jiang**, E. H.-M. Sha, Q. Zhuge, H. Dong, and X. Chen, "Optimal Functional Unit Assignment and Voltage Selection for Pipelined MPSoC with Guaranteed Probability on Time Performance," *Proc. Languages, Compilers, and Tools for Embedded Systems (LCTES)*, Barcelona, Spain, June 2017.
(acceptance rate 13/51=25.5%)

[60] E. H.-M. Sha, **W. Jiang**, Q. Zhuge, L. Yang and X. Chen, "On the Design of High-Performance and Energy-Efficient Probabilistic Self-Timed Systems," *Proc. High Performance Computing and Communications (HPCC)*, NewYork, NY, USA, Aug. 2015.

[61] E. H.-M. Sha, **W. Jiang**, Q. Zhuge, X. Chen and L. Yang, "Prevent Deadlock and Remove Blocking for Self-Timed Systems," *Proc. International Conference on Algorithms and Architectures for Parallel Processing (ICA3PP)*, Zhangjiajie, China, Nov. 2015.

[62] **W. Jiang**, E. H.-M. Sha, X. Chen, Q. Zhuge and L. Wu, "Optimal Functional Assignment and Communication Selection under Timing Constraint for Self-Timed Pipelines," *Proc. IEEE International Conference on Embedded Software and Systems (ICESS)*, Chengdu, China, Aug. 2016.

[63] **W. Jiang**, Q. Zhuge, J. Yi, L. Yang and E. H.-M. Sha, "On self-timed ring for consistent mapping and maximum throughput," *Proc. Embedded and Real-Time Computing Systems and Applications (RTCSA)*, Chongqing, China, Aug. 2014.

[64] E. H.-M. Sha, H. Dong, **W. Jiang**, Q. Zhuge, X. Chen and L. Yang, "On the Design of Reliable Heterogeneous Systems via Checkpoint Placement and Core Assignment," *Proc. Great Lakes Symposium on VLSI (GLSVLSI)*, Chicago, IL, USA, May 2018.

[65] X. Li, Q. Zhuge, **W. Jiang**, H. Dong, W. Lin, X. Chen and E. H.-M. Sha, "A Research of Reducing Write Activities in Multi-table Join for Non-Volatile Memories," *Proc. 15th CCF Annual Conference on Embedded Systems (ESTC)*, Shenyang, China, Nov. 2017. (**Best Student Paper Award**)

[66] E. H.-M. Sha, Y. Liang, **W. Jiang**, X. Chen and Q. Zhuge, "Optimizing Data Placement of MapReduce on Ceph-Based Framework under Load-Balancing Constraint," *Proc. International Conference on Parallel and Distributed Systems (ICPADS)*, Wuhan, China, Dec. 2016.

[67] L. Yang, W. Liu, **W. Jiang**, M. Li, J. Yi and E. H.-M. Sha, "FoToNoC: A hierarchical management strategy based on folded lorus-like Network-on-Chip for dark silicon many-core systems," *Proc. 2016 21st Asia and South Pacific Design Automation Conference (ASP-DAC)*, Macao, Jan. 2016. (**Best Paper Nomination**)

[68] E. H.-M. Sha, X. Chen, Q. Zhuge, L. Shi and **W. Jiang**, "Designing an Efficient Persistent In-Memory File System," *Proc. the 4th IEEE Non-Volatile Memory System and Applications Symposium (NVMSA)*, Hongkong, Aug. 2015. (**Best Paper Award**)

Invited Talks (not include job talk)

- Talk in "Pathways to Quantum Immersion Program" (K-12), 2023
- Talk in ISCA Tutorial on "TorchQuantum: A Fast Library for Parameterized Quantum Circuits", 2023
- University of Notre Dame, 2023 (host: Prof. Yiyu Shi)

- University of Texas at San Antonio, 2023 (host: Prof. Dakai Zhu)
- Invited Talk in Road4NN workshop at DAC'21
- Villanova University (host: Prof. Xun Jiao)
- ICCAD Special Session.
- Indiana University (host: Prof. Lei Jiang)
- IEEE QuantumWeek'21 for QuantumFlow Tutorial.
- ESWEEK'21 for QuantumFlow Tutorial.
- University of Delaware (host: Prof. Chenmo Yang), May. 12, 2021
- tinyML talks webcast, Dec. 8, 2020
- Southeastern University (host: Prof. Qi Zhu), Dec. 2020
- Rice University (host: Prof. Yingyan Lin), Nov. 2020
- University of New Mexico (host: Prof. Lei Yang), Nov. 2020
- tinyML Asia talk, Nov. 19, 2020
- Zhejiang University (host: Prof. Chen Zhuo), Oct. 2020
- University of Science and Technology of China (host: Prof. Yu-Chun Wu), Oct. 2020
- IBM Quantum Summit, Sept. 2020
- Workshop on Research Open Automatic Design for Neural Networks (ROAD4NN), July 2020
- Workshop on Hardware and Algorithms for Learning On-a-chip (HALO), Nov. 2019
- Northeastern University (host: Prof. Yanzhi Wang), Oct. 2019
- Technical Webinar of NSF IUCRC for ASIC, Aug. 2019

External Services

Journal Editor:

- Guest Editor for IEEE Transactions on Circuits and Systems I: Regular Papers (TCAS-I) on Special Issue for ISICAS 2023
- Associate Editor for IEEE Transactions on Circuits and Systems II: Express Briefs
- Guest Editor for Electronics on Special Issue "Quantum Machine Learning: Theory, Methods and Applications"
- Guest Editor for IEEE Transactions on Circuits and Systems II: Express Briefs on ISICAS 2021 Special Session

Workshop Chair/Co-Chair:

- StableQ: Quantum System Stability and Reproducibility Workshop at IEEE QuantumWeek 2023
- Low Power and Fair Embedded Computer Vision Competition at ACM/IEEE ESWEEK 2023
- ACM SIGDA/IEEE CEDA Early Career Workshop at ACM/IEEE DAC 2022
- Workshop on Energy-Efficient Machine Learning (E2ML) at IEEE IGSC 2021

Conference Technical Program Track Chair:

- Track chair of Quantum System Software (QSYS), 2023 IEEE International Conference on Quantum Computing and Engineering (Quantumweek)

- Track co-chair for the Computer-Aided Design and Verification (CAD), 2022 IEEE Computer Society Annual Symposium on VLSI (ISVLSI)

Conference Technical Program Committee:

- Design Automation Conference (DAC 2021, 2022, 2023)
- Design, Automation and Test in Europe Conference (DATE 2022)
- International Conference On Computer Aided Design (ICCAD 2021)
- Asia and South Pacific Design Automation Conference (ASP-DAC 2021, 2022)
- IEEE Computer Society Annual Symposium on VLSI (ISLVLSI 2020)
- ACM Great Lakes Symposium on VLSI (GLSVLSI 2020,2021)
- ACM/SIGAPP Symposium On Applied Computing (SAC 2020,2021)
- IEEE International System-on-Chip Conference (IEEE SOCC 2020)
- Late Break Results in Design Automation Conference (LBR-DAC 2020)
- Student Research Forum at Asia and South Pacific Design Automation Conference (ASP-DAC 2020,2021)
- IEEE Real-Time Systems Symposium (RTSS 2019, Artifact Evaluation Committee)

Journal Reviewer

- IEEE Transactions on Computers (TC)
- IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD)
- IEEE Transactions on Very Large Scale Integration (TVLSI)
- IEEE Transactions on Emerging Topics in Computing (TETC)
- IEEE Transactions on Neural Networks and Learning Systems (TNNLS)
- IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)
- IEEE Embedded System Letter (ELS)
- IEEE Access
- ACM Transactions on Embedded Computing Systems (TECS)
- ACM Transactions on Design Automation of Electronic Systems (TODAES)
- ACM Journal on Emerging Technologies in Computing (JETC)
- Journal of Parallel and Distributed Computing (JPDC)
- Journal of Computer Science and Technology (JCST)
- Communications in Statistics - Simulation and Computation
- Microprocessors and Microsystems (MICPRO)
- SPRINGER Journal of Signal Processing Systems (JSPS)
- HINDAWI Complexity (Complexity)
- Mathematics

Internal Services

- Organizer of weekly quantum computing seminar series at QSEC center, Fall 2022
- Member (Equity Champion) of Microelectronics Faculty Search Committee, Fall 2022
- Distinguish Speaker Committee