Xiang Chen

Tenure-Track Associate Professor, Peking University

CONTACT INFORMATION

School of Computer Science
Peking University

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RESEARCH INTERESTS

Computing Systems Design Automation (DES)

- Hardware Software Co-Design and Co-Optimization
- Specialized AI System and Architecture Design
- Edge and Mobile Computing

Artificial Intelligence (AI)

- Deep Learning Algorithms, Systems, and Middleware Designs
- Trustworthy AI and Reliable AI Systems

EDUCATION BACKGROUND

University of Pittsburgh, Pittsburgh PA, USA

- Degree: Ph.D. Major: Computer Engineering 2012∼2016
- Degree: M.S. Major: Electrical Engineering 2010∼2012
- Adviser: Prof. **Yiran Chen** (currently at Duke University)

Northeastern University, Shenyang, China

- Degree: Bachelor Major: Automation 2006∼2010

PROFESSIONAL EXPERIENCES

Peking University Tenure-Track Associate Professor	Beijing, China	Since Dec. 2023
George Mason University Associate Professor	Fairfax VA, USA	Jan. 2023∼Sept. 2023
George Mason University Tenure-Track Assistant Professor	Fairfax VA, USA	Sep. 2016∼Dec. 2022
Caritas Institute of Higher Education Visiting Scholar	Hong Kong	Jul. 2017∼Aug. 2017
City University of Hong Kong Visiting Scholar	Hong Kong	Jun. 2015∼Aug. 2015
Microsoft Research Asia Research Intern	Beijing, China.	Jun. 2014∼Sep. 2014
Samsung Research and Development Research Intern	Dallas TX, USA	Jul. 2013∼Nov. 2013 Sep. 2012∼Dec. 2012

AWARDS & HONORS

Best Paper Awards and Nominations

- ***Best Paper Award — MLSys*** 2022
  The 5^{th} Conference on Machine Learning and Systems
  "QuadraLib: A Performant Quadratic Neural Network Library for Architecture Optimization and Design Exploration"
- ***Best Paper Award — DATE*** 2017
  The 17^{th} Design Automation and Test in Europe Conference
  "MoDNN: Local Distributed Mobile Computing System for Deep Neural Network"

Awards & Honors (cont'd)

- ***Best Poster Award — MLSys-CrossFL*** 2022
  The 5^{th} Conference on Machine Learning and Systems (MLSys)
  Workshop on Cross Community Federated Learning, 2022.
- ***Best Poster Award — ACM-SIGDA-SRF*** 2015
  ACM Special Interest Group on Design Automation (SIGDA)
  Student Research Forum (SRF) Competition, associated with
  The 20^{th} Asia and South Pacific Design Automation Conference (ASP-DAC), 2015.
- ***Best Paper Award Nomination — ASP-DAC*** 2024
  The 29^{th} Asia and South Pacific Design Automation Conference
  "QuadraNet: Improving High-Order Neural Interaction Efficiency with Hardware-Aware Quadratic Neural Networks"
- ***Best Paper Award Nomination — DATE*** 2020
  The 20^{th} Design Automation and Test in Europe Conference
  "Attention-based Dynamic Optimization for Neural Network Runtime Efficiency"
- ***Best Paper Award Nomination — ICCAD*** 2016
  The 35^{th} International Conference on Computer-Aided Design
  "Scope: Quality Retaining Display Rendering Workload Scaling based on User-Smartphone Distance"

Competition Awards

- ***Winner Award — IEEE Services Hackathon*** 2020
  "Federated Learning System for Transportation Mode Prediction based on Personal Mobility,"
  Hackathon Competition collocated with the IEEE World Congress on Services.
- ***Second Prize — Big Idea Competition*** 2014
  "Invisible Shield," Randall Family Big Idea Start-up Competition, Pittsburgh PA.
- ***Third Prize — ACM-SIGDA-SRF*** 2012
  ACM Special Interest Group on Design Automation (SIGDA),
  Student Research Forum (SRF) Competition, associated with
  The 49^{th} Design Automation Conference (DAC).

Other Awards and Recognitions

- ***National Science Foundation CAREER Award*** 2022
  "Adapt, Learn, Collaborate — Closing the Pervasive Edge AI Loop with Liquid Intelligence"
- ***Microsoft Excellence Award*** 2015
  Star of Tomorrow Research Internship Program (1% of 500)

Research Grants

Federal Research Funding
(*Total Funding Collected: ∼$2M / Total Personal Allocated: ∼$1.26M*)

- ***National Science Foundation*** *CNS-2146421* ***Principal Investigator***
  "CAREER: Adapt, Learn, Collaborate — Closing the Pervasive Edge AI Loop with Liquid Intelligence." **$580,000** (100%), 7/1/2022∼6/30/2027.
- ***National Science Foundation*** *CNS-2003211* ***Principal Investigator***
  "MLWiNS: Decentralized Heterogeneous Deep Learning for Efficient Wireless Spectrum Monitoring." **$499,999** (60%) 10/1/2020∼9/30/2023.
- ***National Science Foundation*** *CNS-1717775* ***Principal Investigator***
  "CSR: Small: Collaborative Research: EUReCa: Enabling Untethered VR/AR System via Human-centric Graphic Computing and Distributed Data Processing."

RESEARCH GRANTS (CONT'D)

$500,000 (50%), 9/1/2017∼8/31/2021.

- ***Air Force Research Lab*** *FA8750-21-1-1015* ***Sub-Contractor***
  "Out-of-Distribution Detection and Physical Adversarial Patch Investigation." **$419,704** (31%), 9/14/2021∼9/13/2023.

Other Funding Management (*Do not count towards the overall funding achievement.*)

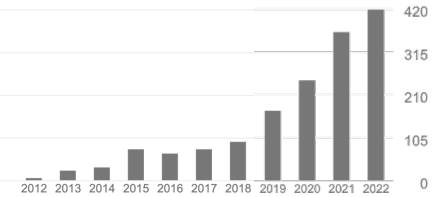
- ***National Science Foundation*** *IIS-1741338* *Substitute-PI*
  "BIGDATA: F: Collaborative Research: Acquisition, Collection and Computation of Dynamic Big Sensory Data in Smart Cities." **$918,057** (30%), 1/1/2018∼12/31/2021.
- ***National Science Foundation*** *CCF-1527396* *Substitute-PI*
  "CIF: Small: Task-Cognizant Sparse Sensing for Inference." **$400,000** (100%), 10/1/2017∼7/31/2020.
- ***National Science Foundation*** *CNS-1704274* *Substitute-PI*
  "SaTC: CORE: Medium: Collaborative: Privacy Attacks and Defense Mechanisms in Online Social Networks." **$555,832** (50%), 9/1/2017∼8/31/2021.
- ***National Science Foundation*** *AST-1547329* *Substitute-PI*
  "EARS: Collaborative Research: Spectrum Sensing for Coexistence of Active and Passive Radio Services." **$496,163** (60%), 1/1/2016∼12/31/2019.

Awards and Scholarships (*Total Award Collected: ∼$45K*)

- ***IEEE Services Hackathon***
  "Federated Learning System for Transportation Mode Prediction based on Personal Mobility." **$1,000**, 1/1/2018∼12/31/2021.
- ***Innovation Works TCC University Grant***
  "Invisible Shield: Device Security via Gesture Authentication." **$25,000**, 2014∼2015.
- ***University of Pittsburgh Innovation Institute — Pitt Ventures***
  "The Invisible Shield: User Classification and Authentication for Mobile Device Based on Continuous Gesture Recognition." **$16,000**, 2014∼2015.
- ***Intel Cornell Cup — System Design Competition***
  "Koalakollar: Squad Tracking and Isolation Event Alert System." **$3,000**, 2013.

PUBLICATION RECORDS

Google Citations (*It may deviate from other records: ∼2100 / H-index = 20*)



*Note: † and * in front of the author list indicate the first author is supervised or co-supervised by me, respectively. Especially for supervised papers, I am located at the end of the list, which is usually reserved for the corresponding author. And ° indicates my first-authored papers. If neither my student nor I am the first author of the publication, usually that is a collaborated work led by some other researchers, and I give full credit to the leading collaborators for the publication.*

Book Chapters (*Total: 1*)

Ch-1 ° *X. Chen, Z. Xu, and F. Yu.* "Mobile Computer Framework for Federated Learning," *Federated Learning: Theory and Practice*, Springer, 2022, in press.

Ch-1 *C. Liu, X. Chen.* "Enabling Neuromorphic Computing for Artificial Intelligence with Hardware-Software Co-Design ," *Neuromorphic Computing*, IntechOpen, 2023, in press.

Refereed Journal Articles (*Total: 14*)

J-1. [IEEE-TCAD '24] * *F. Yu, Z. Xu, L. Shangguan, D. Wang, D. Stamoulis, R. Madhok, N. Karianakis, A. Li, C. Liu, Y. Chen, and X. Chen.* "Rethinking Latency-Aware DNN Design With GPU Tail Effect Analysis," *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, May 2024.

J-2. [IEEE-TCCN '24] * *W. Zhang, Y. Wang, X. Chen, L. Liu, and Z. Tian.* "Collaborative Learning based Spectrum Sensing under Partial Observations," *IEEE Transactions on Cognitive Communications and Networking*, Apr. 2024.

J-3. [IEEE-TNNLS '23] * *P. Xu, Y. Wang, X. Chen, and Z. Tian.* "QC-ODKLA: Quantized and Communication-Censored Online Decentralized Kernel Learning via Linearized ADMM," *IEEE Transactions on Neural Networks and Learning Systems*, Sep. 2023.

J-4. [IEEE-TC '22] † *Z. Xu, F. Yu, J. Xiong, and X. Chen.* "HeliosX: Heterogeneity-Aware Federated Learning for Dynamic Edge Collaboration Management," *IEEE Transactions on Computers*, to appear.

J-5. [IEEE-TC '22] † *F. Yu, W. Zhang, Z. Qin, Z. Xu, D. Wang, C. Liu, Z. Tian, and X. Chen.* "Fed^{2}X: Feature-Aligned Large-Scale Federated Learning Systems," *IEEE Transactions on Computers*, to appear.

J-6. [HPC '22] † *F. Yu, Z. Xu, Z. Qin, and X. Chen.* "Privacy-Preserving Federated Learning for Transportation Mode Prediction based on Personal Mobility Data," *High-Confidence Computing*, Dec. 2022.

J-7. [ACM-TECS '22] † *Z. Xu, F. Yu, and X. Chen.* "LanCeX: A Versatile and Lightweight Defense Method against Condensed Adversarial Attacks," *ACM Transactions on Embedded Computing Systems*, Aug. 2022.

J-8. [IEEE-TCAD '22] † *F. Yu, C. Liu, D. Wang, Y. Wang and X. Chen.* "AntiDoteX: Attention-based Neural Network Runtime Efficiency Dynamic Optimization," *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, Jan. 2022.

J-9. [JMLR '21] * *P. Xu, Y. Wang, X. Chen, and Z. Tian.* "COKE: Communication-Censored Decentralized Kernel Learning," *Journal of Machine Learning Research*, Vol. 22 No. 196, pp. 1∼35, Oct. 2021.

J-10. [IEEE-TCAD '21] † *Z. Qin, F. Yu, Z. Xu, C. Liu, and X. Chen.* "CaptorX: A Class-Adaptive Convolutional Neural Network Reconfiguration Framework," *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, Feb. 2021.

J-11. [IEEE-TCAD '20] † *F. Yu, Z. Qin, C. Liu, D. Wang, and X. Chen.* "REIN the RobuTS: Robust DNN-based Image Recognition in Autonomous Driving Systems," *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, Oct. 2020.

J-12. [IEEE-TCAD '20] † *Z. Xu, F. Yu, C. Liu, and X. Chen.* "DiReCtX: Dynamic Resource-Aware CNN Reconfiguration Framework for Real-Time Mobile Application," *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, May 2020.

J-13. [GMU-JSSR '19] † *R. Yu, L. Punya, K. Wang, Z. Qin, and X. Chen.* "CAPTURE: An End-to-End Mobile Implementation for a Computationally Optimized Deep Learning Framework," *Journal of Student-Scientists' Research, George Mason University*, Nov. 2019.

J-14. [AMC-MFC '18] † *Z. Qin, F. Yu, C. Liu, and X. Chen.* "How Convolutional Neural Networks See the World — A Survey of Convolutional Neural Network Visualization Methods," *Advances in Mathematics of Communications Journal on Mathematical Foundations*

of Computing, Vol. 1, Iss. 2, No. 149, pp. 149∼180, May 2018.

J-15. [ACM-ETCS '12] *Z. Sun, X. Chen, Y. Zhang, H. Li, and Y. Chen*. "Non-volatile Memories as the Data Storage System for Implantable ECG Recorder," *ACM Journal on Emerging Technologies in Computing Systems*, Vol. 8, Iss. 2, No. 13, pp. 1∼16, Jun. 2012.

PUBLICATION RECORDS (CONT'D)

Peer Reviewed Conference Publications (*Total: 55*)

C-1. **[ICML '24]** † *C. Xu, F. Yu, Z. Xu, N. Inkawhich, and X. Chen.* "Out-of-Distribution Detection via Deep Multi-Comprehension Ensemble," *in Proceedings of the International Conference on Machine Learning*, to appear, 2024.

C-2. **[ICASSP '24]** * *P. Xu, Y. Wang, X. Chen, and Z. Tian.* "Communication-Efficient Decentralized Dynamic Kernel Learning," *in Proceedings of the International Conference on Acoustics, Speech, and Signal Processing*, pp. 7135∼7139, 2024.

C-3. **[ASP-DAC '24]** † *C. Xu, F. Yu, Z. Xu, C. Liu, J. Xiong, and X. Chen.* "QuadraNet: Improving High-Order Neural Interaction Efficiency with Hardware-Aware Quadratic Neural Networks," *in Proceedings of the Asia and South Pacific Design Automation Conference*, pp. 19∼25, 2024.

C-4. **[ICML '23]** *J. Zhang, A. Li, M. Tang, J. Sun, X. Chen, F. Zhang, C. Chen, Y. Chen, and H. Li.* "Fed-CBS: A Heterogeneity-Aware Client Sampling Mechanism for Federated Learning via Class-Imbalance Reduction," *in Proceedings of the International Conference on Machine Learning*, pp. 41354∼41381, 2023.

C-5. **[DAC '23]** † *Y. Yu, F. Yu, C. Liu, X. Sheng, and X. Chen.* "EagleRec: Edge-Scale Recommendation System Acceleration with Inter-Stage Parallelism Optimization on GPUs," *in Proceedings of the Design Automation Conference*, pp. 1∼6, 2023.

C-6. **[ICCASP '22]** * *P. Xu, Y. Wang, X. Chen, and Z. Tian.* "Deep Kernel Learning Network with Multiple Learning Paths," *in Proceedings of the International Conference on Acoustics, Speech, & Signal Processing*, pp. 4438∼4442, 2022.

C-7. **[ICC '22]** * *W. Zhang, Y. Wang, F. Yu, Z. Qin, X. Chen, and Z. Tian.* "Wideband Spectrum Sensing based on Collaborative Multi-Task Learning," *in Proceedings of the International Conference on Communication*, pp. 1∼6, 2022.

C-8. **[MLSys '22]** † *Z. Xu, F. Yu, J. Xiong, and X. Chen.* "QuadraLib: A Performant Quadratic Neural Network Library for Architecture Optimization and Design Exploration," *in Proceedings of the Conference on Machine Learning and Systems*, pp. 503∼514, 2022.

C-9. **[WACV '22]** † *Z. Xu, F. Yu, C. Liu, H. Wang, and X. Chen.* "FalCon: Fine-grained Feature Map Sparsity Computing with Decomposed Convolutions for Inference Optimization," *in Proceedings of the Winter Conference on Applications of Computer Vision*, pp. 3634∼3644, 2022.

C-10. **[WACV '22]** † *F. Yu, D. Wang, Y. Chen, N. Karianakis, T. Shen, P Yu, D. Lymberopoulos, S. Lu, W. Shi, and X. Chen.* "SC-UDA: Style and Content Gap Aware Unsupervised Domain Adaptation for Object Detection," *in Proceedings of the Winter Conference on Applications of Computer Vision*, pp. 1061∼1070, 2022.

C-11. **[ICCAD '21]** † *F. Yu, S. Bray, D. Wang, L. Shangguan, X. Tang, C. Liu, and X. Chen.* "Automated Runtime-Aware Scheduling for Multi-Tenant DNN Inference on GPU," *in Proceedings of the International Conference on Computer-Aided Design*, pp. 1∼9, 2021.

C-12. **[DAC '21]** † *Z. Xu, F. Yu, J. Xiong, and X. Chen.* "Helios: Heterogeneity-Aware Federated Learning with Dynamically Balanced Collaboration," *in Proceedings of the Design Automation Conference*, pp. 997∼1022, 2021.

C-13. **[KDD '21]** † *F. Yu, W. Zhang, Z. Qin, Z. Xu, D. Wang, C. Liu, Z. Tian, and X. Chen.* "Fed^2: Feature-Aligned Federated Learning," *in Proceedings of the ACM SigKDD Conference on Knowledge Discovery and Data Mining*, pp. 2066∼2074, 2021.

C-14. **[SEC '20]** † *F. Yu, D. Stamoulis, D. Wang, D. Lymberopoulos, and X. Chen*. "Exploring the Design Space of Efficient Deep Neural Networks," *in Proceedings of the ACM/IEEE Symposium on Edge Computing*, pp. 317∼318, 2020.

PUBLICATION RECORDS (CONT'D)

C-15. [SEC '20] ° *X. Chen and Z. Qin.* "Exploring Decentralized Collaboration in Heterogeneous Edge Training," *in Proceedings of the ACM/IEEE Symposium on Edge Computing*, pp. 450∼453, 2020.

C-16. [ISLPED '20] *C. Liu, F. Yu, Z. Qin, and X. Chen.* "Enabling Efficient ReRAM-based Neural Network Computing via Crossbar Structure Adaptive Optimization," *in Proceedings of the ACM/IEEE International Symposium on Low Power Electronics and Design*, pp. 133∼138, 2020.

C-17. [ECCV '20] *X. Ma, W. Niu, T. Zhang, S. Liu, S. Lin, H. Li, X. Chen, J. Tang, K. Ma, B. Ren, and Y. Wang.* "An Image Enhancing Pattern-based Sparsity for Real-time Inference on Mobile Devices," *in Proceedings of the European Conference on Computer Vision*, pp. 629∼645, 2020.

C-18. [DATE '20] † *F. Yu, C. Liu, D. Wang, Y. Wang, and X. Chen.* "AntiDOte: Attention-based Dynamic Optimization for Neural Network Runtime Efficiency," *in Proceedings of the Design Automation and Test in Europe Conference*, pp. 951∼956, 2020.

C-19. [DATE '20] † *F. Yu, Z. Qin, D. Wang, P. Xu, C. Liu, Z. Tian, and X. Chen.* "DC-CNN: Computational Flow Redefinition for Efficient CNN Inference through Model Structural Decoupling," *in Proceedings of the Design Automation and Test in Europe Conference*, pp. 1097∼1102, 2020.

C-20. [ASP-DAC '20] † *Z. Xu, F. Yu, C. Liu, and X. Chen.* "LanCe: A Comprehensive and Lightweight CNN Defense Methodology against Physical Adversarial Attacks on Embedded Multimedia Applications," *in Proceedings of the Asia and South Pacific Design Automation Conference*, pp. 470∼475, 2020.

C-21. [ASP-DAC '20] *X. Ma, G. Yuan, S. Lin, C. Ding, F. Yu, T. Liu, W. Wen, X. Chen, and Y. Wang.* "Tiny but Accurate: A Pruned, Quantized and Optimized Memristor Crossbar Framework for Ultra Efficient DNN Implementation," *in Proceedings of the Asia and South Pacific Design Automation Conference*, pp. 301∼306, 2020.

C-22. [CIKM '19] *X. Guo, A. Alipour-Fanid, L. Wu, H. Purohit, X. Chen, K. Zeng, and Liang Zhao.* "Multi-stage Deep Classifier Cascades for Open World Recognition," *in Proceedings of the ACM International Conference on Information and Knowledge Management*, pp. 179∼188, 2019.

C-23. [BMVC '19] † *Z. Qin, F. Yu, C. Liu, and X. Chen.* "Functionality-Oriented Convolutional Filter Pruning," *in Proceedings of the British Machine Vision Conf.*, No. 229, 2019.

C-24. [IJCAI '19] † *F. Yu, Z. Qin, C. Liu, L. Zhao, Y. Wang, and X. Chen.* "Interpreting and Evaluating Neural Network Robustness," *in Proceedings of the International Joint Conference on Artificial Intelligence*, pp. 4199∼4205, 2019.

C-25. [KDD '19] *J. Wang, F. Yu, X. Chen, and L. Zhao.* "ADMM for Efficient Deep Learning with Global Convergence," *in Proceedings of the ACM SigKDD Conference on Knowledge Discovery and Data Mining*, pp. 111∼119, 2019.

C-26. [DAC '19] † *Z. Xu, F. Yu, C. Liu, and X. Chen.* "ReForm: Static and Dynamic Resource-Aware DNN Reconfiguration Framework for Mobile Devices," *in Proceedings of the Design Automation Conference*, pp. 183:1∼183:6, 2019.

C-27. [DAC '19] † *Z. Xu, F. Yu, C. Liu, and X. Chen.* "MASKER: Adaptive Mobile Security Enhancement against Automatic Speech Recognition in Eavesdropping," *in Proceedings of the Design Automation Conference*, pp. 163:1∼163:6, 2019.

PUBLICATION RECORDS (CONT'D)

C-28. [ASP-DAC '19] † *Z. Xu, F. Yu, C. Liu, and X. Chen.* "HAMPER: High-Performance Adaptive Mobile Security Enhancement against Malicious Speech and Image Recognition," *in Proceedings of the Asia and South Pacific Design Automation Conf.*, pp. 512∼517, 2019.

C-29. [ASP-DAC '19] † *F. Yu, C. Liu, and X. Chen.* "REIN: A Robust Training Method for Enhancing Generalization Ability of Neural Networks in Autonomous Driving Systems," *in Proceedings of the Asia and South Pacific Design Automation Conf.*, pp. 456∼461, 2019.

C-30. [ASP-DAC '19] † *Z. Qin, F. Yu, C. Liu, and X. Chen.* "CAPTOR: A Class Adaptive Filter Pruning Framework for Convolutional Neural Networks in Mobile Applications," *in Proceedings of the Asia and South Pacific Design Automation Conf.*, pp. 444∼449, 2019.

C-31. [GlobalSIP '18] * *Z. Zhang, X. Chen, and Z. Tian.* "A Hybrid Neural Network Framework and Application to Radar Automatic Target Recognition," *in Proceedings of the IEEE Global Conference on Signal and Information Processing*, pp. 246∼250, 2018.

C-32. [ISLPED '18] † *Z. Xu, Z. Qin, F. Yu, C. Liu, and X. Chen.* "DiReCt: Resource-Aware Dynamic Model Reconfiguration for Convolutional Neural Network in Mobile Systems," *in Proceedings of the ACM/IEEE International Symposium on Low Power Electronics and Design*, pp. 37:1∼37:6, 2018.

C-33. [ISVLSI '18] *C. Liu, Q. Dong, F. Liu, F. Yu, and X. Chen.* "ReRise: An Adversarial Example Restoration System for Neuromorphic Computing Security," *in Proceedings of the IEEE Computer Society Annual Symposium on VLSI*, pp. 470∼475, 2018.

C-34. [ICCAD '17] * *J. Mao, Z. Qin, Z. Xu, K. Nixon, X. Chen, H. Li, and Y. Chen.* "AdaLearner: An Adaptive Distributed Mobile Learning System for Neural Networks," *in Proceedings of the International Conf. on Computer-Aided Design*, pp. 291∼296, 2017.

C-35. [ICCAD '17] † *Z. Qin, Z. Xu, Q. Dong, Y. Chen, and X. Chen.* "VoCaM: Visualization Oriented Convolutional Neural Network Acceleration on Mobile Systems," *in Proceedings of the International Conference on Computer-Aided Design*, pp. 835∼840, 2017.

C-36. [ICCAD '17] * *J. Mao, Z. Yang, W. Wen, C. Wu, L. Song, K. Nixon, X. Chen, H. Li, and Y. Chen.* "MeDNN: A Distributed Mobile System with Enhanced Partition and Deployment for Large-Scale DNNs," *in Proceedings of the International Conference on Computer-Aided Design*, pp. 751∼756, 2017.

C-37. [SoCC '17] *L. Broyde, K. Nixon, X. Chen, and H. Li.* "MobiCore: An Adaptive Hybrid Approach for Power-Efficient CPU Management on Android Devices," *in Proceedings of the IEEE International System-on-Chip Conference*, pp. 221∼226, 2017.

C-38. [DATE '17] * *J. Mao, X. Chen, K. Nixon, C. Krieger, and Y. Chen.* "MoDNN: Local Distributed Mobile Computing System for Deep Neural Network," *in Proceedings of the Design Automation and Test in Europe Conference*, pp. 1396∼1401, 2017.

C-39. [ICCAD '16] *K. Nixon, X. Chen, and Y. Chen.* "Scope: Quality Retaining Display Rendering Workload Scaling based on User-Smartphone Distance," *in Proceedings of the International Conference on Computer-Aided Design*, pp. 1∼6, 2016.

C-40. [RSP '16] ° *X. Chen, J. Mao, K. Nixon, and Y. Chen.* "MORPh: Mobile OLED Power Friendly Camera System," *in Proceedings of the International Symposium on Rapid System Prototyping*, pp. 7∼11, 2016.

PUBLICATION RECORDS (CONT'D)

C-41. [SoCC '16] ° *X. Chen, K. Nixon, and Y. Chen.* "Practical Power Consumption Analysis with Current Smartphones," *in Proceedings of the IEEE International System-on-Chip Conference*, pp. 333∼337, 2016.

C-42. [DAC '16] ° *X. Chen, J. Mao, J. Gao, K. Nixon, and Y. Chen.* "MORPh: Mobile OLED-friendly Recording and Playback System for Low Power Video Streaming," *in Proceedings of the Design Automation Conference*, pp. 1∼6, 2016.

C-43. [ASP-DAC '16] *K. Nixon, X. Chen, and Y. Chen.* "Footfall: GPS Polling Scheduler for Power Saving on Wearable Devices," *in Proceedings of the Asia and South Pacific Design Automation Conference*, pp. 563∼568, 2016.

C-44. [ASP-DAC '16] *K. Nixon, X. Chen, and Y. Chen.* "SlowMo: Enhancing Mobile Gesture-based Authentication Schemes via Sampling Rate Optimization," *in Proceedings of the Asia and South Pacific Design Automation Conference*, pp. 462∼467, 2016.

C-45. [DAC '15] ° *X. Chen, J. Xue, and Y. Chen.* "DaTuM: Dynamic Tone Mapping Technique for OLED Display Power Saving based on Video Classification," *in Proceedings of Design Automation Conference*, pp. 8∼12, 2015.

C-46. [DAC '14] ° *X. Chen, M. Dong, C. Zhang, and Y. Chen.* "Demystify Smartphone Power Consumption: The Evolution of Smartphone Communication Modules," *in Proceedings of the Design Automation Conference*, 2014.

C-47. [CODES+ISSS '13] *M. Zhao, X. Chen, Y. Chen, and J. Xue.* "Online OLED Dynamic Voltage Scaling for Video Streaming Applications on Mobile Devices," *in Proceedings of International Conf. on Hardware/Software Co-design and System Synthesis*, pp. 1∼10, 2013.

C-48. [RTSS '13] *M. Zhao, X. Chen, Y. Chen, and J. Xue.* "Online OLED Dynamic Voltage Scaling for Video Streaming Applications on Mobile Devices," *in Proceedings of the IEEE Real-Time Systems Symposium*, Vol. 10, Iss. 2, No. 18, 2013.

C-49. [ASP-DAC '13] *K. Nixon, X. Chen, Z. H. Mao, Y. Chen, and K. Li.* "Mobile User Classification and Authorization based on Gesture Usage Recognition," *in Proceedings of the Asia and South Pacific Design Automation Conference*, pp. 384∼389, 2013.

C-50. [ICCAD '12] ° *X. Chen, J. Xue, and Y. Chen.* "Mobile Devices User — The Subscriber and also the Publisher of Real-Time OLED Display Power Management Plan," *in Proceedings of the International Conference on Computer-Aided Design*, pp. 687∼690, 2012.

C-51. [ICCAD '12] ° *X. Chen, B. Liu, M. Zhao, J. Xue, X. Guo, and Y. Chen.* "Active Compensation Technique for the Thin-Film Transistor Variations and OLED Aging of Mobile Device Displays," *in Proceedings of the International Conference on Computer-Aided Design*, pp. 516∼522, 2012.

C-52. [DAC '12] ° *X. Chen, M. Zhao, J. Zeng, J. Xue, and Y. Chen.* "Quality-Retaining OLED Dynamic Voltage Scaling for Video Streaming Applications on Mobile Devices," *in Proceedings of the Design Automation Conference*, pp. 1000∼1005, 2012.

C-53. [ASP-DAC '12] ° *X. Chen, J. Zeng, Y. Chen, and H. Li.* "Fine-grained Dynamic Voltage Scaling on OLED Display," *in Proceedings of the Asia and South Pacific Design Automation Conference*, pp. 807∼812, 2012.

C-54. [CICC '11] *P. Wang, X. Chen, Y. Chen, H. Li, S. Kang, X. Zhu, and W. Wu.* "A 1.0V 45nm Nonvolatile Magnetic Latch Design and Its Robustness Analysis," *in Proceedings of the IEEE Custom Integrated Circuits Conference*, pp. 1∼4, 2011.

C-55. [WCSE '09] ° *X. Chen, Z. Zhang, and R. Chen.* "A Real-Time Driving Fatigue Moni-

toring DSP Device based on Computing Complexity of Binarized Image," *in Proceedings of IEEE International Workshop on Computer Science and Engineering*, pp. 84∼89, 2009.

Peer Reviewed Workshop Publications (*Total: 10*)

Cw-1. [SPAWC '23] * *W. Zhang, Y. Wang, X. Chen, and Z. Tian.* "Spectrum Transformer: Wideband Spectrum Sensing using Multi-Head Self-Attention," *in Proceedings of the IEEE International Workshop on Signal Processing Advances in Wireless Communications*, Aug. 2022.

Cw-2. [SPAWC '23] * *W. Zhang, Y. Wang, X. Chen, and Z. Tian.* "Spectrum Transformer: Wideband Spectrum Sensing using Multi-Head Self-Attention," *in Proceedings of the IEEE International Workshop on Signal Processing Advances in Wireless Communications*, Sep. 2023.

Cw-3. [MLSys-CI '22] † *F. Yu, D. Wang, L. Shangguan, M. Zhang, C. Liu, T. Soyata, and X. Chen.* "A Survey of Multi-Tenant Deep Learning Inference on GPU," *in Proceedings of the Conference on Machine Learning and Systems, Workshop on Cloud Intelligence / AIOps*, Aug. 2022.

Cw-4. [CVPR-V4AS '20] † *F. Yu, D. Wang, Y. Chen, N. Karianakis, P. Yu, D. Lymberopoulos, and X. Chen.* "Unsupervised Domain Adaptation for Object Detection via Cross-Domain Semi-Supervised Learning," *in Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition, Workshop on Vision for all Seasons: Adverse Weather and Lighting Conditions*, Jun. 2020.

Cw-5. [SEC '19] † *Z. Qin, F. Yu, and X. Chen.* "Task-Adaptive Incremental Learning for Intelligent Edge Devices," *in Proceedings of the ACM/IEEE Symposium on Edge Computing*, pp. 340∼341, Nov. 2019.

Cw-6. [KDD-AIoT '19] † *Z. Xu, F. Yu, and X. Chen.* "DoPa: A Fast and Comprehensive CNN Defense Methodology against Physical Adversarial Attacks," *in Proceedings of the ACM SigKDD Conference on Knowledge Discovery and Data Mining, Workshop on Artificial Intelligence of Things*, No. 3, Aug. 2019.

Cw-7. [NIPS-CDNNIA '18] † *Z. Qin, F. Yu, C. Liu, and X. Chen.* "Demystifying Neural Network Filter Pruning," *in Proceedings of the Conference on Neural Information Processing Systems, Workshop on Compact Deep Neural Networks with Industrial Applications*, No.24, Dec. 2018.

Cw-8. [NIPS-CDNNIA '18] † *F. Yu, Z. Qin, and X. Chen.* "Distilling Critical Paths in Convolutional Neural Networks," *in Proceedings of the Conference on Neural Information Processing Systems, Workshop on Compact Deep Neural Networks with Industrial Applications*, No. 34, Dec. 2018.

Cw-9. [USENIX HotPower '14] ◦ *X. Chen, K. Nixon, H. Zhou, Y. Liu, and Y. Chen.* "FingerShadow: An OLED Power Optimization based on Smartphone Touch Interactions," *in Proceedings of the International Workshop on Power-Aware Computing and System*, No. 6, Oct. 2014.

Cw-10. [USENIX HotPower '14] *K. Nixon, X. Chen, H. Zhou, Y. Liu, and Y. Chen.* "Mobile GPU Power Consumption Reduction via Dynamic Resolution and Frame Rate Scaling," *in Proceedings of the International Workshop on Power-Aware Computing and System*, No. 5, Oct. 2014.

Cw-11. [USENIX HotMobile '13] ◦ *X. Chen, Y. Chen, Z. Ma, and F. Fernandes.* "How is Energy Consumed in Smartphone Display Applications?" *in Proceedings of the International Workshop on Mobile Computing Systems and Applications*, No. 3, Feb. 2013.

PUBLICATION RECORDS (CONT'D)

Peer Reviewed Conference Posters, Tracks of Work-in-Progress (WIP) (*Total: 13*)

Cp-1. [DAC-WIP '23] † *C. Xu, F. Yu, Z. Xu, C. Liu, J. Xiong, and X. Chen.* "QuadraNet: Improving High-Order Neural Interaction Efficiency with Hardware-Aware Quadratic Neural Networks," *the Design Automation Conference, Work-in-Progress Workshop*, Jul. 2023.

Cp-2. [MLSys-CrossFL '22] † *Y. Yu, F. Yu, Z. Xu, D. Wang, M. Zhang, A. Li, S. Bray, C. Liu, and X. Chen.* "Powering Multi-Task Federated Learning with Competitive GPU Resource Sharing," *the Conference on Machine Learning and Systems, Workshop on Cross-Community Federated Learning: Algorithms, Systems and Co-designs*, Poster, Sep. 2022.

Cp-3. [DAC-WIP '22] † *Y. Yu, F. Yu, Z. Xu, D. Wang, M. Zhang, A. Li, S. Bray, C. Liu, and X. Chen.* "Rethinking Multi-Tenant AI with GPU Computing," *the Design Automation Conference, Work-in-Progress Workshop*, Jul. 2022.

Cp-4. [DAC-WIP '22] * *S. Bray, Z. Xu, X. Chen, and C. Liu.* "An In-Sensor Adversarial Attacks Defending Approach with Computing-in-Memory Engine," *the Design Automation Conference, Work-in-Progress Workshop*, Jul. 2022.

Cp-5. [DAC-WIP '21] † *F. Yu, Z. Xu, D. Wang, C. Liu, and X. Chen.* "DeltaNet: High-Performance Federated Learning with Hybrid Data and Model Parallelism," *the Design Automation Conference, Work-in-Progress Workshop*, Dec. 2021.

Cp-6. [IBM-AICS '20] † *Z. Xu, J. Xiong, F. Yu, and X. Chen.* "Efficient Neural Network Implementation with Quadratic Neuron," *the IBM IEEE CAS/EDS AI Compute Symposium*, Poster, Nov. 2020.

Cp-7. [IBM-AICS '19] † *Z. Xu, F. Yu, C. Liu, and X. Chen.* "A Comprehensive and Lightweight CNN Defense Methodology against Physical Adversarial Attacks on Embedded Multimedia Applications," *the IBM IEEE CAS/EDS AI Compute Sym.*, Poster, Oct. 2019.

Cp-8. [SEC-EdgeSP '18] † *Z. Qin, F. Yu, C. Liu, Y. Wang, and X. Chen.* "Adge: An ADMM-Based Audio Adversarial Example Generation Method," *the ACM/IEEE Symposium on Edge Computing, Workshop on Security and Privacy in Edge Computing*, Poster, Oct. 2018.

Cp-9. [DAC-WIP '18] † *F. Yu, Q. Dong, and X. Chen.* "ASP: A Fast Adversarial Attack Example Generation Framework based on Adversarial Saliency Prediction," *the Design Automation Conference, Work-in-Progress Workshop*, Jun. 2018.

Cp-10. [DAC-WIP '18] † *Z. Xu, F. Yu, and X. Chen.* "Performance-Aware Dynamic Model Generation for Convolutional Neural Network in Mobile Systems," *the Design Automation Conference, Work-in-Progress Workshop*, Jun. 2018.

Cp-11. [DAC-WIP '13] ° *X. Chen, Z. Ma, F. Fernandes, J. Xue, and Y. Chen.* "Dynamic Tone Mapping on OLED Display based on Video Classification," *the Design Automation Conference, Work-in-Progress Workshop*, Jun. 2013.

Cp-12. [DAC-WIP '13] ° *X. Chen, and H. Li.* "P-Spectrum: A Personalized Smartphone Power Management Technique based on Real-time Battery and User Behavior Monitoring," *the Design Automation Conference, Work-in-Progress Workshop*, Jun. 2013.

Cp-13. [DAC-WIP '13] *K. Nixon, X. Chen, Z. Mao, K. Li, and Y. Chen.* "The Invisible Shield: User Classification and Authentication for Mobile Device based on Gesture Recognition," *the Design Automation Conference, Work-in-Progress Workshop*, Jun. 2013.

PUBLICATION RECORDS (CONT'D)

Archived Papers (*Total: 7*)

A-1. [arXiv '23] † *M. Zhang, F. Yu, Y. Yu, M. Zhang, A. Li, and X. Chen*. "FedHC: A Scalable Federated Learning Framework for Heterogeneous and Resource-Constrained Clients," *arXiv:2305.15668*, May 2023.

A-2. [arXiv '23] † *Y. Yu, F. Yu, M. Zhang, D. Wang, T. Soyata, C. Liu, and X. Chen*. "GACER: Granularity-Aware ConcurrEncy Regulation for Multi-Tenant Deep Learning," *arXiv:2304.11745*, Apr. 2023.

A-3. [arXiv '22] † *F Yu, D Wang, L Shangguan, M Zhang, C Liu, and X Chen*. "A Survey of Multi-Tenant Deep Learning Inference on GPU," *arXiv:2203.09040*, Mar. 2022.

A-4. [arXiv '21] † *F. Yu, D. Wang, L. Shangguan, M. Zhang, X. Tang, C. Liu, and X. Chen*. "A Survey of Large-Scale Deep Learning Serving System Optimization: Challenges and Opportunities," *arXiv:2111.14247*, Nov. 2021.

A-5. [arXiv '20] † *F. Yu, Z. Xu, T. Shen, D. Stamoulis, L. Shangguan, D. Wang, R. Madhok, C. Zhao, X. Li, N. Karianakis, D. Lymberopoulos, A. Li, C. Liu, Y. Chen, and X. Chen*. "Towards Latency-aware DNN Optimization with GPU Runtime Analysis and Tail Effect Elimination," *arXiv:2011.03897*, Nov. 2020.

A-6. [arXiv '20] † *F. Yu, W. Zhang, Z. Qin, Z. Xu, D. Wang, C. Liu, Z. Tian, and X. Chen*. "Heterogeneous Federated Learning," *arXiv:2008.06767*, Aug. 2020.

A-7. [arXiv '18] *S. Ye, T. Zhang, K. Zhang, J. Li, K. Xu, Y. Yang, F. Yu, J. Tang, M. Fardad, S. Liu, X. Chen, X. Lin, and Y. Wang*. "Progressive Weight Pruning of Deep Neural Networks using ADMM," *arXiv:1810.07378*, Oct. 2018.

A-8. [arXiv '18] † *F. Yu, C. Liu, Y. Wang, L. Zhao, and X. Chen*. "Interpreting Adversarial Robustness: A View from Decision Surface in Input Space," *arXiv:1810.00144*, Oct. 2018.

A-9. [arXiv '18] † *Z. Xu, F. Yu, C. Liu, and X. Chen*. "HASP: A High-Performance Adaptive Mobile Security Enhancement Against Malicious Speech Recognition," *arXiv:1809.01697*, Sep. 2018.

A-10. [arXiv '18] † *F. Yu, Z. Xu, Y. Wang, C. Liu, and X. Chen*. "Towards Robust Training of Neural Networks by Regularizing Adversarial Gradients," *arXiv:1805.09370*, May 2018.

PROFESSIONAL SERVICE ACTIVITIES

Journal Editorial Services

- ***Guest Editor — MDPI-VLSI*** 2022
  Journal of Electronics (JE)
  Special Issue of VLSI Design,Testing and Applications (VLSI)
- ***Associated Editor — TCAS*** 2022
  IEEE Transactions on Circuits and Systems
- ***Associated Editor — Frontiers*** 2021
  Frontiers in Big Data 2021, Topic: AI for Sustainability
- ***Associated Editor — IET-CPS*** 2020
  Journal of the Institution of Engineering and Technology (IET)
  Special Issue of Cyber-Physical Systems (CPS)
- ***Associated Editor — TC-CPS*** 2017
  IEEE Technical Committee on Cyber-Physical System (CPS)
- ***Editor — SIGDA News*** 2017∼Present
  ACM Special Interest Group Design Automation (SIGDA) E-Newsletter

Conference General Chair, Executive, and Steering Committee (including Workshops)

- ***General Chair — ICS*** IEEE Cloud Summit Oct. 2022
- ***Co-Chair — NSF-Arch-1*** Mar. 2021
  The 2022 NSF Workshop on Redefining the Future of Computer Architecture from First Principles
- ***Co-Chair — NSF-PIM*** Mar. 2021
  The 2021 NSF Workshop on Processing-in-Memory Technology
- ***Chair — ArchEdge*** Nov. 2020
  The 3^{rd} ACM/IEEE Workshop on Computing Architecture for Edge Computing, in association of the 5^{th} ACM/IEEE Symposium on Edge Computing
- ***General Chair — SEC*** The 4^{th} ACM/IEEE Symposium on Edge Computing Nov. 2019
- ***Chair — ArchEdge*** Nov. 2019
  The 2^{nd} ACM/IEEE Workshop on Computing Architecture for Edge Computing, in association of the 4^{th} ACM/IEEE Symposium on Edge Computing
- ***Chair — ArchEdge*** Oct. 2018
  The 1^{st} ACM/IEEE Workshop on Computing Architecture for Edge Computing, in association of the 3^{rd} ACM/IEEE Symposium on Edge Computing

Conference Organization

- ***Local Chair — CHASE*** Nov. 2022
  The 7^{th} IEEE/ACM International Conference on Connected Health: Applications, Systems and Engineering Technologies
- ***Publication Chair — IGSC*** Oct. 2022
  The 13^{th} International Green and Sustainable Computing Conference
- ***Organization Committee — ISLPED*** Aug. 2022
  The 25^{th} ACM/IEEE International Symposium on Low Power Electronics

PROFESSIONAL SERVICE ACTIVITIES (CONT'D)

- ***Organization Committee — ISLPED*** Jul. 2021
  The 24^{th} ACM/IEEE International Symposium on Low Power Electronics
- ***Local Chair — GLSVLSI*** May 2019
  The 29^{th} ACM Great Lakes Symposium on VLSI
- ***Organization Committee — CADthlon*** Aug. 2017
  ACM Special Interest Group Design Automation (SIGDA) CADathlon, in association with the International Conference on Computer-Aided Design (ICCAD)
- ***Local Chair — NanoCom*** Jul. 2017
  The 4^{th} ACM International Conf. on Nanoscale Computing and Communication
- ***Organization Committee — ICFC*** Jul. 2016
  The Future Chip Forum 2016 by Tsinghua University

Conference Session Chair

- **[DAC '22]** The 59^{th} Design Automation Conference
  Session: Be Water: Adaptive AI for Dynamic Systems Jul. 2022
- **[ASP-DAC '21]** The 26^{th} Asia and South Pacific Design Automation Conference
  Session: Toward Energy-Efficient Embedded Systems Jan. 2021
- **[SoCC '19]** The 31^{rd} IEEE International System-on-Chip Conference
  Session: Intelligent Design for Edge Computing Sep. 2019
- **[DAC '19]** The 56^{th} Design Automation Conference
  Session: Emerging Memory in Emerging Applications Jun. 2019
- **[DAC '18]** The 55^{th} Design Automation Conference
  Session: Go with the Flow — Microfluidics,
  Liquid State Machines, Reservoirs, and More! Jun. 2018
- **[HALO '17]** The SIGDA Workshop on Hardware & Algorithms
  for Learning On-a-Chip Nov. 2017
- **[HALO '17]** The SIGDA Workshop on Hardware & Algorithms
  for Learning On-a-Chip Nov. 2017

Technical Program Committee Chair

- **[ICCAD '24]** The 43^{rd} International Conference on Computer-Aided Design
  Research Track: CAD for AI
- **[ICCAD '23]** The 42^{nd} International Conference on Computer-Aided Design
  Research Track: AI/ML Design — System and Platform
- **[DAC '22]** The 59^{th} Design Automation Conference
  Research Track: Tools and Design Methods with and for AI

Technical Program Committee Member

- **[AAAI '21]** The AAAI Conference on Artificial Intelligence
- **[AIoT-KDD '22 '21 '20 '19]**
  The International Workshop on Artificial Intelligence of Things in association with The ACM SigKDD Conference on Knowledge Discovery and Data Mining

PROFESSIONAL SERVICE ACTIVITIES (CONT'D)

- **[AIoT-AAAI '20]** The International Workshop on Artificial Intelligence of Things in association with The AAAI Conference on Artificial Intelligence
- **[ASAP '21 '20 '19]** The Annual IEEE International Conference on Architectures and Processors
- **[ASP-DAC '21 '20 '19]** The Asia and South Pacific Design Automation Conference
- **[ASP-DAC SRF '21 '20 '18 '17]** The Asia and South Pacific Design Automation Conference Student Research Forum (SRF) Competition
- **[CCNCPS-ICC '18 '17 '16]** The IEEE International Workshop on Communication, Computing, and Networking Conference in Cyber Physical Systems (CCNCPS)
- **[CODES+ISSS '23 '22]** The International Conference on Hardware/Software Codesign and System Synthesis
- **[COINS '19]** The International Conference on Omni-Layer Intelligent Systems
- **[DAC '22 '21 '20 '19]** The Design Automation Conference
- **[DAC-PF '19]** The DAC — Ph.D. Student Research Forum Competition
- **[DC '16]** The IEEE International Workshop on Energy-Aware Data Centers: Design, Analysis, and Implementation
- **[ECCV '24]** The European Conference on Computer Vision
- **[Euro-Par '18]** The International Conference on Parallel and Distributed Computing Workshops, Advanced Parallel Processing Technology for Artificial Intelligence
- **[EdgeSP '20 '19 '18]** The ACM/IEEE Workshop on Security and Privacy in Edge Computing
- **[GLVLSI '23 '22 '21 '20 '19 '17]** The ACM Great Lakes Symposium on VLSI
- **[ICDCS '23 '22 '21]** The International Conference on Distributed Computing Systems
- **[ICONIP '21 '20]** The International Conference on Neural Information Processing
- **[ICPADS '22]** The IEEE International Conference on Parallel and Distributed Systems
- **[MLSys '24 '23]** The Conference on Systems and Machine Learning
- **[NanoArch '19]** The 15^{th} IEEE/ACM Int'l Symposium on Architectures and Processors
- **[SEC '22 '21]** The ACM/IEEE Symposium on Edge Computing
- **[SoCC '22 '20 '19]** The IEEE International System-on-Chip Conference
- **[VLSI-SoC '22 '21]** The IFIP/IEEE International Conference on Very Large Scale Integration
- **[WACV '23 '24]** The Winter Conference on Applications of Computer Vision

PROFESSIONAL SERVICE ACTIVITIES (CONT'D)

Journal and Conference Referee

- **[CEM]** IEEE Consumer Electronics Magazine
- **[COMCOM]** Elsevier Journal on Computer and Telecommunications
- **[DSN]** The International Journal of Distributed Sensor Network
- **[DSTI]** IEEE Journal of Design & Test
- **[ESL]** IEEE Embedded Systems Letters
- **[FGCS]** Elsevier Journal of Future Generation Computer Systems
- **[IA]** IEEE Access
- **[IJIP]** The International Journal of Image Processing
- **[ISCAS]** IEEE International Symposium on Circuits & Systems
- **[JEDS]** IEEE Journal of the Electron Devices Society
- **[JETC]** ACM Journal on Emerging Technologies in Computing Systems
- **[JETCAS]** IEEE Journal on Emerging and Selected Topics in Circuits and Systems
- **[JSA]** Elsevier Journal of Journal of Systems Architecture
- **[JVCI]** Elsevier Journal of Visual Communication and Image Representation
- **[NAS]** IEEE Int'l Conference on Networking Architecture, and Storage
- **[NCAA]** The International Journal of Neural Computing and Applications
- **[NEUCOM]** Elsevier Journal of Neurocomputing
- **[PATMOS]** IEEE International Symposium on Power and Timing Modeling, Optimization and Simulation
- **[SUSCOM]** Elsevier Journal of Sustainable Computing Informatics and Systems
- **[SUSTDE]** The MDPI Journal of Sustainability
- **[TC]** IEEE Transactions on Computers
- **[TCAD]** IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems
- **[TCPS]** ACM Transactions on Cyber Physical Systems
- **[TECS]** ACM Transactions on Embedded Computing Systems
- **[THMS]** IEEE Transactions on Human-Machine Systems
- **[THPC]** CCF Transactions on High Performance Computing
- **[TIOT]** ACM Transactions on Internet of Things
- **[TNNLS]** IEEE Transactions on Neural Networks and Learning Systems
- **[TODAES]** ACM Transactions on Design Automation of Electronic Systems
- **[TPDS]** IEEE Transactions on Parallel and Distributed Systems
- **[TSC]** IEEE Transactions on Services Computing

PROFESSIONAL SERVICE ACTIVITIES (CONT'D)

- **[TSMC]** IEEE Transactions on Systems, Man and Cybernetics: Systems
- **[TVLSI]** IEEE Transactions on Very Large Scale Integration Systems
- **[TWC]** IEEE Transactions on Wireless Communications
- **[UIST]** ACM Symposium on User Interface Software and Technology

Proposal, Panel, and Other Reviews

- National Science Foundation (NSF) — Panelist and Ad Hoc Reviewer
- Department of Energy (DOE) — Panelist and Ad Hoc Reviewer
- Research Grants Council of Hong Kong (RGC) — Ad Hoc Reviewer
- Swiss National Science Foundation — Ad Hoc Reviewer
- Jeffress Trust Awards Program — Ad Hoc Reviewer

University Service — George Mason University

- ECE Faculty Recruitment Committee — 2018
- ECE Graduate Recruitment Committee for International Students — 2017, 2018
- Mentor, Aspiring Scientists Summer Internship Program (ASSIP) — 2017∼2019
- Co-Director, Signal processing, Mobile Computing, Artificial intelligence Research and Technology (SMART) — 2019∼Present
- Director, Intelligence Fusion Lab (IF-Lab) — 2016∼Present

INVITED TALKS, SEMINAR, & PRESENTATIONS

T-1. "Rethinking GPU Computing for Multi-Tenant Artificial Intelligence," *the ACM SigKDD Conference on Knowledge Discovery and Data Mining, Workshop on Artificial Intelligence of Things*, Invited Talk, Washington D.C., 8/15/2022.

T-2. "MLWiNs: Decentralized Heterogeneous Deep Learning for Efficient Wireless Spectrum Monitoring —- Phase 3," *the Intel/NSF Workshop on Machine Learning and Wireless Networking*, Online Seminar Series, 10/7/2021.

T-3. "MLWiNs: Decentralized Heterogeneous Deep Learning for Efficient Wireless Spectrum Monitoring —- Phase 2," *the Intel/NSF Workshop on Machine Learning and Wireless Networking*, Online Seminar Series, 5/21/2021.

T-4. "MLWiNs: Decentralized Heterogeneous Deep Learning for Efficient Wireless Spectrum Monitoring —- Phase 1," *the Intel/NSF Workshop on Machine Learning and Wireless Networking*, Online Seminar Series, 10/19/2020.

T-5. "The Software and Hardware Approaches for Deep Learning Security Enhancement," *School of Engineering and Applied Sciences(SEAS), University of the District of Columbia*, SEAS Research and Education Seminar, Washington D.C., 11/19/2019.

T-6. "Interpreting and Evaluating Neural Network Robustness," *the 2^{nd} IBM IEEE CAS/EDS AI Compute Symposium (IBM-AICS), IBM Thomas J. Watson Research Center*, Presentation, Yorktown Heights NY, 10/17/2019.

T-7. "High-Performance and Robust Computing for Artificial Intelligence Computing," *IBM Thomas J. Watson Research Center*, Invited Talk, Yorktown Heights NY, 10/9/2019.

T-8. "Interpretable Artificial Intelligence in High-Performance Computing," *the EDA Workshop, in association with the TPC Meeting of the 25^{th} Asia and South Pacific Design Automation Conference (ASP-DAC)*, Seminar, Taipei Taiwan, 8/27/2019.

T-9. "Interpreting and Evaluating Neural Network Robustness," *the 28^{th} International Joint Conference on Artificial Intelligence (IJCAI)*, Presentation, Macao China, 8/14/2019.

T-10. "ReForm: Static and Dynamic Resource-Aware DNN Reconfiguration Framework for Mobile Device," *the 56^{th} Design Automation Conference (DAC)*, Presentation, Las Vegas NV, 6/6/2019.

T-11. "MASKER: Adaptive Mobile Security Enhancement against Automatic Speech Recognition in Eavesdropping," *the 56^{th} Design Automation Conference (DAC)*, Presentation, Las Vegas NV, 6/6/2019.

T-12. "High-Performance and Robust Computing for Artificial Intelligence on Edge," *Comcast Research Lab*, Invited Talk, Washington D.C., 3/20/2019.

T-13. "The Software-Hardware Approaches for Deep Learning Security Enhancement," *the IEEE Workshop on SecArch: Built-in Security-Architecture, Chip and System, in association with the 25^{th} IEEE International Symposium on High-Performance Computer Architecture (HPCA)*, Invited Talk, Washington D.C., 2/17/2019.

T-14. "Interpretation, Evaluation, and Enhancement of Neural Network Robustness," *the International Workshop on Hardware and Algorithms for Learning On-a-Chip (HALO), in association with the 37^{th} IEEE International Conference on Computer-Aided Design (ICCAD)*, Invited Talk, San Diego CA, 11/8/2018.

T-15. "Interpretation, Evaluation, and Enhancement of Neural Network Robustness," *National Science Foundation (NSF) Workshop on Internet-of-Things (IoT) Systems*, Seminar, San Diego CA, 11/4/2018.

INVITED TALKS, SEMINAR, & PRESENTATIONS (CONT'D)

T-16. "Adversarial Examples, Threats or Promises: Mobile Application Case Studies," *the International Workshop on Design Automation for Analog and Mixed-Signal Circuit (AMS), in association with the 37th IEEE International Conference on Computer-Aided Design (ICCAD)*, Invited Talk, San Diego CA, 11/8/2018.

T-17. "Adge: An ADMM-Based Audio Adversarial Example Generation Method," *the 1st ACM/IEEE Workshop on Security and Privacy in Edge Computing (EdgeSP)*, Presentation, Seattle WA, 10/28/2018.

T-18. "Security of Machine Learning in Mobile Systems," *National Science Foundation (NSF) Workshop on Cyber-Physical Systems (CPS), University of North Carolina at Charlotte*, Seminar, Charlotte NC, 7/27/2018.

T-19. "Challenges and Opportunities in Mobile Development," *George Washington University*, Invited Talk, Washington D.C., 2/22/2018.

T-20. "Adversarial Attacks in Mobile Neural Network System," *Beijing Normal University*, Invited Talk, Beijing China, 1/18/2018.

T-21. "Adversarial Attacks in Mobile Neural Network System," *Capital Normal University*, Invited Talk, Beijing China, 1/16/2018.

T-22. "Adversarial Attacks in Mobile Neural Network System," *Chinese University of Hong Kong*, Invited Talk, Hong Kong, 1/14/2018.

T-23. "Adversarial Attacks in Mobile Neural Network System," *Northeastern University*, Invited Talk, Shenyang China, 12/24/2017.

T-24. "Challenges and Opportunities in Next-gen VR/AR Development," *Huawei Beijing Research Center*, Invited Talk, Beijing China, 1/9/2017.

T-25. "VoCaM: Visualization Oriented Convolutional Neural Network Acceleration on Mobile System," *the 36th IEEE International Conference on Computer-Aided Design (ICCAD)*, Presentation, Irvine CA, 11/13/2017.

T-26. "Challenges and Opportunities in Next-gen VR/AR Development," *Lenovo Innovation Center*, Invited Talk, Beijing China, 12/15/2016.

T-27. "Challenges and Opportunities in Mobile Development," *Northeastern University*, Invited Talk, Shenyang China, 12/29/2016.

T-28. "Challenges and Opportunities in Mobile Development," *Peking University*, Invited Talk, Beijing China, 12/28/2016.

T-29. "Challenges and Opportunities in Mobile Development," *Beijing University of Post and Telecommunication*, Invited Talk, Beijing China, 12/26/2016.

T-30. "Challenges and Opportunities in Mobile Development," *Shandong University*, Invited Talk, Jinan China, 12/21/2016.

T-31. "Challenges and Opportunities in Mobile Development," *Beijing University of Technology*, Invited Talk, Beijing China, 12/19/2016.

T-32. "Challenges and Opportunities in Mobile Development," *Beihang University*, Invited Talk, Beijing China, 12/18/2016.

T-33. "Practical Power Consumption Analysis with Current Smartphones," *the 29th IEEE International System-on-Chip Conference (SoCC)*, Presentation, Seattle WA, 9/9/2016.

INVITED TALKS, SEMINAR, & PRESENTATIONS (CONT'D)

T-34. "MORPh: Mobile OLED-friendly Recording and Playback System for Low Power Video Streaming," *the 53rd Design Automation Conf. (DAC)*, Presentation, Austin TX, 6/9/2016.

T-35. "From Pixels to People — Designing a Power Efficient, Smart, and Secure Mobile System," *George Mason University*, Invited Talk, Fairfax VA, 3/28/2016.

T-36. "From Device to End-user: The Evolution in Smartphone Power Optimization," *Hong-Kong City University*, Invited Talk, Hong Kong, 8/19/2015.

T-37. "From Device to End-user: The Evolution in Smartphone Power Optimization," *Peking University*, Invited Talk, Beijing China, 7/24/2015.

T-38. "DaTuM: Dynamic Tone Mapping Technique for OLED Display Power Saving based on Video Classification," *the 52nd Design Automation Conference (DAC)*, Presentation, San Francisco CA, 6/10/2015.

T-39. "FingerShadow: An OLED Power Optimization based on Smartphone Touch Interactions," *the 6th International Workshop on Power-Aware Computing and System (USENIX HotPower)*, Presentation, Denver CO, 10/5/2014.

T-40. "Smartphone and Display Power Consumption Analysis and Optimization," *Tsinghua University*, Invited Talk, Beijing China, 8/29/2014.

T-41. "OREO: Tri-layer Optimization for Power Efficient OLED Display," *Microsoft Research Asia*, Invited Talk, Beijing China, 6/4/2014.

T-42. "How is Energy Consumed in Smartphone Display Applications?" *the 16th International Workshop on Mobile Computing Systems and Applications (USENIX HotMobile)*, Presentation, Jekyll Island GA, 2/26/2013.

T-43. "OLED Display Power Optimization in Android UI System," *Samsung R&D Lab*, Invited Talk, Dallas TX, 12/15/2012.

T-44. "Active Compensation Technique for the Thin-Film Transistor Variations and OLED Aging of Mobile Device Display," *the 31st International Conference on Computer-Aided Design (ICCAD)*, Presentation, Austin TX, 12/7/2012.

T-45. "Quality-retaining OLED Dynamic Voltage Scaling for Video Streaming Applications on Mobile Device," *the 49th Design Automation Conference (DAC)*, Presentation, San Francisco CA, 6/19/2012.

TEACHING ACTIVITIES

New Course Development — George Mason University

- *ECE-617 Distributed and Federated Learning*
- *ECE-616 Advanced Mobile Systems and Applications*
- *ECE-516 Mobile Systems and Applications*

Teaching History — George Mason University

• *ECE-617 Distributed and Federated Learning*	14 Graduates	Spring 2022
• *ECE-516 Mobile Systems and Applications*	35 Graduates	Spring 2022
• *ECE-616 Advanced Mobile Systems and Applications*	10 Graduates	Fall 2021
• *ECE-516 Mobile Systems and Applications*	14 Graduates	Spring 2021

TEACHING ACTIVITIES (CONT'D)

- *ECE-616 Advanced Mobile Systems and Applications* 23 Graduates Fall 2020
- *ECE-301 Digital Electronics* 93 Undergraduates Fall 2020
- *ECE-516 Mobile Systems and Applications* 25 Graduates Spring 2020
- *ECE-445 Computer Organization* 66 Undergraduates Spring 2020
- *ECE-616 Advanced Mobile Systems and Applications* 11 Graduates Fall 2019
- *ECE-516/590 Mobile Systems and Applications* 11 Graduates Spring 2019
- *ECE-301 Digital Electronics* 80 Undergraduates Spring 2019
- *ECE-301-01 Digital Electronics* 88 Undergraduates Fall 2018
- *ECE-301-02 Digital Electronics* 92 Undergraduates Fall 2018
- *ECE-516/590 Mobile Systems and Applications* 16 Graduates Spring 2018
- *ECE-616/699 Advanced Mobile Systems and Applications* 12 Graduates Fall 2017
- *ECE-516/590 Mobile Systems and Applications* 22 Graduates Spring 2017

Teaching History — University of Pittsburgh (as a Graduate Teaching Assistant)

- *ECE-0501 Digital System Laboratory* 2012
- *ECE-0101 Linear Circuit System* 2012, 2014
- *ECE-1160/2160 Introduction to Embedded Systems* 2012∼2015
- *ECE-1161/2161 Embedded Computer System Design II* 2012∼2015
- *ECE-1192/2192 Introduction to VLSI Design* 2011∼2013

Supervised PostDoc, Ph.D., and M.S. Students as Primary Advisor

(†, ‡, $^{\text{II}}$ *indicates the students co-superivsed with Prof. Zhi (Gerry) Tian, Prof. Yiran Chen, and Prof. Chenchen Liu*, respectively.)

Zhe Zhang†	PostDoc	George Mason Univ.	2016.12∼2020.06	First Job: Chinese Academy of Science
Chenhui Xu	Ph.D.	George Mason Univ.	2022.09∼2027.05	(Expected)
Yongbo Yu	Ph.D.	George Mason Univ.	2021.09∼2026.05	(Expected)
Shawn Bray$^{\text{II}}$	Ph.D.	Univ. Maryland B.C.	2020.09∼2025.05	(Expected)
Weishan Zhang†	Ph.D.	George Mason Univ.	2019.09∼2024.05	(Expected)
Fuxun Yu	Ph.D.	George Mason Univ.	2017.09∼2022.05	Microsoft Research
Zirui Xu	Ph.D.	George Mason Univ.	2017.09∼2022.05	CVS Research
Zhuwei Qin	Ph.D.	George Mason Univ.	2017.09∼2020.09	San Francisco State University
Jiachen Mao‡	Ph.D.	Duke University	2017.09∼2020.09	Apple
Qide Dong	M.S.	George Mason Univ.	2016.09∼2017.07	Exacloud Inc.
Genqian Hu	M.S.	George Mason Univ.	2016.09∼2017.07	
Po-Shun Liu	M.S.	George Mason Univ.	2016.09∼2017.07	
Chien-Hung Shun	M.S.	George Mason Univ.	2016.09∼2017.07	

Teaching Activities (cont'd)

Visiting Students

Zhao Yang	Ph.D.	Northwestern Polytechnical University	2019.08∼2021.07

Dissertation Committees

Juan F. R. Rochac	Ph.D.	Univ. of the District of Columbia	2017.09∼2022.05
Xinda Wang	Ph.D.	George Mason Univ.	2017.09∼
Md Shohidul Islam	Ph.D.	George Mason Univ.	2019.09∼
Hossein Sayadi	Ph.D.	George Mason Univ.	2015.05∼2019.05
Saurabh Deshpande	M.S.	George Mason Univ.	2017.08∼2018.08
Onkar Randive	M.S.	George Mason Univ.	2017.08∼2018.08
Bhoopal Gunna	M.S.	George Mason Univ.	2016.01∼2017.08
Sandhya R. S. Raju	M.S.	George Mason Univ.	2016.01∼2017.08

Student Awards

- Fuxun Yu — Outstanding Academic Achievement Award — 2022
  Electrical and Computer Engineering Department, George Mason University
- Yongbo Yu — Richard Newton Young Fellow Award — 2022
  The 59^{th} Design Automation Conference
- Fuxun Yu — Richard Newton Young Fellow Award — 2021
  The 57^{th} Design Automation Conference
- Zhuwei Qin — Summer Research Fellowship — 2020
  George Mason University
- Zhuwei Qin — Richard Newton Young Fellow Award — 2017
  The 54^{th} Design Automation Conference

Travel Grants

- Chenhui Xu, Young Faculty Workshop — $600 — 2016
  The 60^{th} Design Automation Conference
- Yongbo Yu, Student Travel Grant — $1,700 — 2022
  The 5^{th} Conference on Machine Learning and Systems
- Zirui Xu, Student Research Forum (SRF) — $1,000 — 2015
  The 25^{th} Asia and South Pacific Design Automation Conference
- Xiang Chen, NSF CSR PI Meeting — $1,000 — 2019
- Xiang Chen, NSF CPS Workshop — $1,000 — 2018
- Xiang Chen, International Young Scholar Forum — $2,300 — 2017
  Northeastern University, Shenyang China
- Xiang Chen, Young Faculty Workshop — $600 — 2016
  The 53^{th} Design Automation Conference
- Xiang Chen, Ph.D. Forum — $650 — 2016
  The 53^{th} Design Automation Conference
- Xiang Chen, ACM Student Research Competition (SRC) — $1,000 — 2015
  The 34^{th} International Conference on Computer-Aided Design

TRAVEL GRANTS (CONT'D)

• Xiang Chen, Student Research Forum (SRF) The 20^{th} Asia and South Pacific Design Automation Conference	$450	2015
• Xiang Chen, Young Student Support Program (YSSP) The 49^{th} Design Automation Conference	$610	2012
• Xiang Chen, ACM Student Research Competition (SRC) The 49^{th} Design Automation Conference	$450	2012
• Xiang Chen, Non-Volatile Memories Workshop (SRC)	$350	2012