SEC 2019 Program at a Glance

THURSDAY, NOV 7 (Adams/Madison/Washington)	
08:00 – 09:00	**Breakfast** (Virginia Foyer)
09:00 – 09:10	**Opening Remarks**
09:10 – 10:10	**Keynote Speech 1 - Democratization of the Edge**
10:10 – 10:40	**Coffee break**
10:40 – 12:00	**Session I - Edgy Resource Management**
12:00 – 13:30	**Lunch** (Crystall Ballroom)
13:30 – 14:30	**Panel - Edge Computing: Where are we today and what's next?**
14:30 – 15:50	**Session II – Apps (killer?) at the edge**
15:50 – 16:20	**Coffee break**
16:20 – 18:00	**Poster Session** (Virginia Foyer)
18:00 – 20:30	**Banquet and Awards**

FRIDAY, NOV 8 (Adams/Madison/Washington)			Special Event: Women-in-Computing (Monroe Room)	
08:00 – 09:00	**Breakfast** (Virginia Foyer)	10:10 – 10:20	**Welcome Remarks**	
09:00 – 10:00	**Keynote Speech 2 - Driving Data to the Edge**	10:20 – 10:45	**Keynote Speech 1 - Helping you take a fearless leap toward your successful career in Tech**	
10:00 – 10:30	**Coffee break**	10:45 – 11:10	**Keynote Speech 2 - How to succeed as a STEM woman in Academia**	
10:30 – 11:50	**Session III – Mobile & Wearable Devices**	11:10 – 11:40	**Panel - Industry and academic careers: challenges, prospects, and recipes**	
		11:40 – 11:50	**Best Student Poster Awards**	
11:50 – 13:00	**Lunch** (Crystall Ballroom)			
13:00 – 14:20	**Session IV – The Bleeding Edge of Machine Learning**			
14:20 – 14:50	**Coffee break**			
14:50 – 16:10	**Session V – Robust Systems and Services**			
16:10 – 17:30	**Ph.D. Forum**			

SATURDAY, NOV 9					
ArchEdge (Washington I)		**HotWot** (Washington II)		**EdgeSP** (Washington III)	
08:15 – 08:30	**Introduction and Opening Remarks**				
08:30 – 09:15	**Keynote Speech 1 - A Vision towards Pervasive Edge Computing**				
09:15 – 10:00	**Keynote Speech 2 - Unified Memory-Computing Architecture with Memristive Devices**				
10:00 – 10:30	**Coffee Break**				
10:30 – 12:00	**Session I**	10:30 – 12:10	**Session I**	10:45 – 12:00	**Session I**
12:00 – 13:30	**Lunch**	12:10 – 13:30	**Lunch**	12:00 – 13:30	**Lunch**
13:30 – 14:40	**Session II**	13:40 – 15:20	**Session II**	13:30 – 14:45	**Session II**
15:00 – 16:00	**Session III**			14:45 – 14:50	**Closing Remarks**
16:00 – 16:30	**Coffee Break**			14:50 – 15:00	**Coffee Break**
16:30 - 17:30	**Panel**				

SEC 2019 Technical Program

THURSDAY, NOV 7 (Adams/Madison/Washington)		
08:00 – 09:00	**Breakfast** (Virginia Foyer)	
09:00 – 09:10	**Welcome Remarks**	
09:10 – 10:10	**Keynote Speech 1 - Democratization of the Edge** Sujata Tibrewala (*Intel*)	
10:10 – 10:40	**Coffee break**	
10:40 – 12:00	**Session I - Edgy Resource Management** Session chair: Christopher Stewart	
10:40 – 11:00	Linearize, Predict and Place: Minimizing the Makespan for Edge-based Stream Processing of Directed Acyclic Graphs	*Shweta Khare, Hongyang Sun (Vanderbilt University); Julien Gascon-Samson, Kaiwen Zhang (ÉTS Montréal); Yogesh Barve, Anirban Bhattacharjee, Aniruddha Gokhale, Xenofon Koutsoukos (Vanderbilt University)*
11:00 – 11:20	LinkShare: Device-Centric Control for Concurrent and Continuous Mobile-Cloud Interactions	*Bo Hu, Wenjun Hu (Yale University)*
11:20 – 11:40	Sandpaper: Mitigating performance interference in CDN edge proxies.	*Jeffrey Helt (Princeton University); Guoyao Feng, Srinivasan Seshan, Vyas Sekar (Carnegie Mellon University)*
11:40 – 12:00	DeFog: Fog Computing Benchmarks	*Jonathan McChesney, Nan Wang (Queen's University Belfast); Ashish Tanwer (Cisco Systems); Eyal de Lara (University of Toronto); Blesson Varghese (Queen's University Belfast)*
12:00 – 13:30	**Lunch** (Crystall Ballroom)	
13:30 – 14:30	**Panel: Edge Computing: Where are we today and what's next?** ***Moderator:*** Weisong Shi *(Wayne State University)* ***Panelists:*** Victor Bahl *(Technical Fellow, Microsoft)* Schahram Dustdar *(TU Wien)* Gaurav Chawla *(VP / Fellow, Server and Infrastructure Systems, Office of the CTO, Dell EMC)* Matt Mutka *(Michigan State University and National Science Foundation)* Humberto J. La Roche *(Principal Engineer at Cisco Systems)*	
14:30 – 15:50	**Session II – Apps (killer?) at the edge** Session chair: Yuanchao Shu	
14:30 – 14:50	E2M: An Energy-Efficient Middleware for Computer Vision Applications on Autonomous Mobile Robots	*Liangkai Liu, Jiamin Chen, Marco Brocanelli, Weisong Shi (Wayne State University)*
14:50 – 15:10	Managing Edge Resources for Fully Autonomous Aerial Systems	*Christopher Stewart, Jayson Boubin, Naveen T.R. Babu, John Chumley, Shiqi Zhang (The Ohio State University)*

15:10 – 15:30	F-Cooper: Feature based Cooperative Perception for Autonomous Vehicle Edge Computing System Using 3D Point	*Qi Chen, Xu Ma, Sihai Tang, Jingda Guo, Qing Yang, Song Fu (University of North Texas)*
15:30 – 15:50	I-SAFE: Instant Suspicious Activity identiFication at the Edge using Fuzzy Decision Making	*Seyed Yahya Nikouei, Yu Chen (Binghamton University); Alexander Aved, Erik Blasch (U.S. Air Force Research Laboratory); Timothy R. Faughnan (Binghamton University)*
15:50 – 16:20	**Coffee break**	
16:20 – 18:00	**Poster Session** (Virginia Foyer)	
18:00 – 20:30	**Banquet and Awards**	

FRIDAY, NOV 8 (Adams/Madison/Washington)		
08:00 – 09:00	**Breakfast** (Virginia Foyer)	
09:00 – 10:00	**Keynote Speech 2 - Driving Data to the Edge** Ken-ichi Murata *(Project General Manager – Connected Strategy, Connected Company, Toyota Motor Corporation and President & Chair of Board of Directors, Automotive Edge Computing Consortium)*	
10:00 – 10:30	**Coffee break**	
10:30 – 11:50	**Session III – Mobile & Wearable Devices** Session chair: Yifan Zhang	
10:30 – 10:50	RILOD: Near Real-Time Incremental Learning for Object Detection at the Edge	*Dawei Li, Serafettin Tasci, Shalini Ghosh, Jingwen Zhu, Junting Zhang, Larry Heck (Samsung Research America)*
10:50 – 11:10	Exploring the Capabilities of Mobile Devices in Supporting Deep Learning	*Yitao chen, Saman Biookaghazadeh, Ming Zhao (Arizona State University)*
11:10 – 11:30	Collaborative Learning of Human Behavior: An Empirical Study on Location Prediction	*Yan Lu (New York University), Yuanchao Shu, Xu Tan, Yunxin Liu, Mengyu Zhou, Qi Chen (Microsoft Research), Dan Pei (Tsinghua University)*
11:30 – 11:50	Towards Scalable Edge-Native Applications	*Junjue Wang, Ziqiang Feng, Shilpa George, Roger Iyengar (Carnegie Mellon University); Pillai Padmanabhan (Intel Labs); Mahadev Satyanarayanan (Carnegie Mellon University)*
11:50 – 13:00	**Lunch** (Crystall Ballroom)	
13:00 – 14:20	**Session IV – The Bleeding Edge of Machine Learning** Session Chair: Mahadev Satyanarayanan	
13:00 – 13:20	DeepSave: Saving DNN Inference During Handovers on the Edge	*Weiyu Ju, Dong Yuan, Wei Bao, Liming Ge, Bing Bing Zhou (The University of Sydney)*
13:20 – 13:40	Couper: DNN Model Slicing for Visual Analytics Containers at the Edge	*Ke-Jou Hsu, Ketan Bhardwaj, Ada Gavrilovska (Georgia Institute of Technology)*
13:40 – 14:00	Adaptive Parallel Execution of Deep Neural Networks on Heterogeneous Edge Devices	*Li Zhou, Mohammad Hossein Samavatian (The Ohio State University); Anys Bacha*

		(University of Michigan); Saikat Majumdar, Radu Teodorescu (The Ohio State University)
14:00 – 14:20	Collaborative Cloud-Edge Computation for Personalized Driving Behavior Modeling	*Xingzhou Zhang (Institute of Computing Technology, Chinese Academy of Sciences; University of Chinese Academy of Sciences; Wayne State University); Mu Qiao (IBM Research - Almaden); Liangkai Liu (Wayne State University); Yunfei Xu (DENSO International America Inc); Weisong Shi (Wayne State University)*
14:20 – 14:50	**Coffee break**	
14:50 – 16:10	**Session V – Robust Systems and Services** Session chair: Padmanabhan Pillai	
14:50 – 15:10	Infrastructure Fault Detection and Prediction in Edge Cloud Environments	*Mbarka Soualhia (Ecole Polytechnique Montreal); Chunyan Fu (Ericsson); Foutse Khomh (École Polytechnique de Montréal)*
15:10 – 15:30	CSPOT: Portable, Multi-scale Functions-as-a-Service for IoT	*Rich Wolski, Chandra Krintz, Fatih Bakir, Gareth George, Wei-Tsung Lin (UC Santa Barbara)*
15:30 – 15:50	Why Cloud Applications Are not Ready for the Edge (yet)	*Chanh Nguyen, Amardeep Mehta, Cristian Klein (Umeå University), Erik Elmroth (Umeå university)*
15:50 – 16:10	Quartz: Time-as-a-Service for Coordination in Geo-Distributed Systems	*Sandeep Dsouza, Raj Rajkumar (Carnegie Mellon University); Heiko Koehler, Akhilesh Joshi, Satyam Vaghani (Nutanix Inc.)*
16:10 – 17:30	**Ph.D. Forum**	

SEC 2019 Special Event: Women-in-Computing

FRIDAY, NOV 8 (Monroe Room)	
10:10 – 10:20	**Welcome Remarks**
10:20 – 10:45	**Keynote Speech 1 - Helping you take a fearless leap toward your successful career in Tech** Christine Moor *(YouTube)*
10:45 – 11:10	**Keynote Speech 2 - How to succeed as a STEM woman in Academia** Nathalie Japkowicz (Professor and Department Chair, Department of Computer Science, American University)
11:10 – 11:40	**Panel : Industry and academic careers: challenges, prospects, and recipes** **Moderator:** Lei Ding *(Accenture Labs)* **Panelist:** Pelin A. Kurtay *(Associate Chair of ECE Department, George Mason University)* Ian McCulloh *(Principal Director, Accenture)* Victor P. Piotrowski *(Lead Program Director, National Science Foundation)* Ursula Trelogan *(Senior Manager, Digital Product Management, Capital One)* Liz White *(Associate Chair of Compute Science Department, George Mason University)*
11:40 – 11:50	**Best Student Poster Awards**
11:50 – 13:00	**Lunch** (Crystall Ballroom)

Poster Papers, NOV 7 (Virginia Foyer)	
1	***ChordEdge: Design of Chord Ring and SDN based Edge Infrastructure Management System.*** Kewei Sha (University of Houston)
2	***Deep Learning based Task Scheduling in A Cloud RAN Enabled Edge Environment.*** Jude Fletcher (University of Oxford)
3	***Privacy-by-Design Task Offloading for UAV-mounted Cloudlets.*** Lena Mashayekhy (University of Delaware)
4	***Traffic Congestion Assessment Based on Street Level Data for On-Edge Deployment.*** Yuan Li (University of North Texas)
5	***Cost-Aware Cloudlet Placement in Edge Computing Systems.*** Lena Mashayekhy (University of Delaware)
6	***Deep Learning-based C/U Plane Separation Architecture for Automotive Edge Computing.*** Ping Du (University of Tokyo, Toyota Motor Corporation)
7	***Fast Video Facial Expression Recognition by Deeply Tensor-compressed LSTM Neural Network on Mobile Device.*** Peining Zhen (Shanghai Jiao Tong University, Southern University of Science and Technology)
8	***Container-Based Architecture for Optimal Face-Recognition Tasks in Edge Computing.*** Miguel Jimeno (Universidad del Norte)
9	***Distributed Deep Neural Network Training on Edge Devices.*** Daniel Benditkis (Edgify)
10	***Demo: A System for Operating Energy-Aware Cloudlets.*** Thomas Rausch (TU Wien)
11	***Revisiting Online Scheduling for AI-Driven Internet of Things.*** Naveen T.R. Babu (The Ohio State University)
12	***EdgeServe: Efficient Deep Learning Model Caching at the Edge.*** Tian Guo (Worcester Polytechnic Institute)
13	***Virtual Reality Streaming at the Edge: A Power Perspective.*** Sheng Wei (Rutgers University, University of Nebraska-Lincoln, Worcester Polytechnic Institute)
14	***Demo: Google Cloud Platform Security.*** Kazi Zunnurhain (Kean University)
15	***Adaptive Task Offloading over Wireless in Mobile-Edge Computing.*** Saptarshi Debroy (City University of New York)
16	***Cost-Effective Microservice Scaling in Edge Clouds.*** Amit Samanta (Max Planck Institute for Software Systems, Tsinghua University)
17	***Fast Inference Services for Alternative Deep Learning Structures.*** Eduardo Romero (The Ohio State University)
18	***An Efficient Mobile-Edge Collaborative System for Video Photorealistic Style Transfer.*** Ang Li (Duke University, Quantil Inc)
19	***A SDN-based Network Layer for Edge Computing.*** An Wang (Case Western Reserve University)

20	***FFmpeg360 for 360-Degree Videos: Edge-Based Transcoding, View Rendering, and Visual Quality Comparison.*** Yao Liu (SUNY Binghamton, The Ohio State University)
21	***Task-Adaptive Incremental Learning for Intelligent Edge Devices.*** Xiang Chen (George Mason University)
22	***A Neuromorphic GAN system for Intelligent Computing on Edge.*** Chenchen Liu (University of Maryland, Baltimore County)

Ph.D. Forum Papers, NOV 8 (Adams/Madison/Washington)	
1	***OpenEdgeMap: An Edge-Based High-Definition Map Update and Distribution Platform*** Liangkai Liu, Weisong Shi (Wayne State University)
2	***Exploring the Capabilities of Mobile Devices in Supporting Deep Learning*** Yitao Chen, Saman Biookaghazadeh, Ming Zhao (Arizona State University)
3	***Towards Mobile Edge Computing Architecture for Low-latency Applications*** Sumit Maheshwari, Dipankar Raychaudhuri (Rutgers University)
4	***Bringing the Physical into the Virtual: Drones in the Construction Industry*** Shilpa Anna George (Carnegie Mellon University)
5	***Cross-ISA Security Extensions Virtualization*** *Jin Wu (Harbin Institute of Technology)*
6	***Resource Management in Multi-tenancy Clouds*** Li Liu (George Mason University)
7	***Enabling Efficient and Scalable Data Center Monitoring Using Edge-based Software Defined Measurement*** Zili Zha (George Mason University)
8	***Scaling Wearable Cognitive Assistance*** Junjue Wang (Carnegie Mellon University)
9	***Intelligent Resource Provisioning and Computation Offloading at the Edge*** *Ke-Jou Hsu (Georgia Institute of Technology)*
10	***Smart Public Safety as An Edge Service: A Lightweight Video Processing and Online Decision-Making Approach*** Seyed Yahya Nikouei, Yu Chen (Binghamton University)
11	***RNNFast: An Accelerator for Recurrent Neural Networks Using Domain Wall Memory*** *Mohammad Hossein Samavatian (Ohio State University), Anys Bacha (University of Michigan), Li Zhou (Ohio State University), Radu Teodorescu (Ohio State University)*
12	***Reliable and Efficient Mobile Edge Computing for Dynamic IoT Systems*** *Minoo Hosseinzadeh, Hana Khamfroush (University of Kentucky)*
13	***Latency-Aware Stream Processing at the Edge*** Shweta Khare (Vanderbilt University)
14	***Deep Learning based task scheduling in a Cloud RAN enabled edge environment*** *Jude Fletcher, David Wallom (University of Oxford)*

ArchEdge 2019 Program

	SATURDAY, NOV 9 (Washington I)
08:15 - 08:30	**Introduction and Opening Remarks** Speaker: Yiran Chen *(Duke University)*
08:30 - 10:00	**Keynote Session** Moderator: Yiran Chen *(Duke University)*
08:30 – 09:15	**Keynote Speech 1 - A Vision towards Pervasive Edge Computing** Yuanyuan Yang *(National Science Foundation)*
09:15 – 10:00	**Keynote Speech 2 - Unified Memory-Computing Architecture with Memristive Devices** Qing Wu *(Air Force Research Laboratory)*
10:00 – 10:30	**Coffee Break**
10:30 – 12:00	**Session I – Accelerator Design for Edge Computing** Session chair: Alec Koppel *(U.S. Army Research Laboratory)*
10:40 – 11:00	**Accelerate Service Live Migration in Resource-limited Edge Computing Systems** *Zhe Zhou, Peking University*
11:00 – 11:20	**PAPS: Power Budget-Aware Pipeline Scheduling for an Embedded ReRAM-based Accelerator** *Keni Qiu, Capital Normal University*
11:20 – 11:40	**High Speed and Energy Efficient Deep Neural Network for Edge Computing** *Yang Yi, Virginia Tech*
11:40 – 12:00	**Lightweight Prediction Based Acceleration for Neural Network Inference** *Min Li, The Chinese University of Hong Kong*
12:00 – 13:30	**Lunch**
13:30 – 14:40	**Session II – Applications of Edge Computing** Session chair: Xiang Chen *(George Mason University)*
13:30 – 14:00	**Lightning Talk: From Cloud to Edge, Are You Ready?** *Bin Ni, Quantil Inc.*
14:00 – 14:20	**An Efficient Mobile-Edge Collaborative System for Video Photorealistic Style Transfer** *Ang Li, Duke University*
14:20 – 14:40	**Practical Challenges of Edge Computing, and Its Collaboration with Stream Computing** *Zhixin Liu, Water Mirror*
15:00 – 16:00	**Session III – Edge Computing Networks** Session chair: Chenchen Liu *(University of Maryland Baltimore County)*
15:00 – 15:20	**Delay-Constrained Offloading of Computationally Intensive Workloads in Edge Computing** *Haibo Zeng, Virginia Tech*

15:20 – 15:40	**Machine Learning Enabled Distributed Mobile Edge Computing Network** *Lingjia Liu, Virginia Tech*
15:40 – 16:00	**Embedded Sensory Data Memory Optimization for IoT Edge Inference with Privacy, Accuracy, and Energy Efficiency** *Na Gong, University of South Alabama*
16:00 – 16:30	**Coffee Break**
16:30 – 17:30	**Panel: How Edge will Reshape Computing Architecture?** **Moderator:** Yiran Chen *(Duke University)* **Panelists:** Sandip Kundu *(National Science Foundation)* Bin Ni *(Quantil Inc.)* Robinson E. Pino *(Department of Energy)* Qing Wu *(Air Force Research Laboratory)* Yuanyuan Yang *(National Science Foundation)*

HotWot Program

SATURDAY, NOV 9 (Washington II)	
08:15 - 08:30	**Introduction and Opening Remarks** Speaker: Yiran Chen *(Duke University)*
08:30 - 10:00	**Keynote Session** Moderator: Yiran Chen *(Duke University)*
08:30 – 09:15	**Keynote Speech 1 - A Vision towards Pervasive Edge Computing** Yuanyuan Yang *(National Science Foundation)*
09:15 – 10:00	**Keynote Speech 2 - Unified Memory-Computing Architecture with Memristive Devices** Qing Wu *(Air Force Research Laboratory)*
10:00 – 10:30	**Coffee Break**
10:30 - 12:10	**Session I - WoT Security and Systems** Session chair: Xiaohui Peng *(Chinese Academy of Sciences)*
10:30 – 10:55	**IoT Malware Ecosystem in the Wild: A Glimpse into Analysis and Exposures** *Jinchun Choi (University of Central Florida & Inha University); Afsah Anwar, Hisham Alasmary (University of Central Florida); Jeffrey Spaulding (Canisius College); DaeHun Nyang (Inha University); Aziz Mohaisen (University of Central Florida)*
10:55 – 11:20	**Performance Evaluation of Deception System for Deceiving Cyber Adversaries in Adaptive Virtualized Wireless** *Danda B Rawat, Naveen Naik Sapavath (Howard University); Min Song (Stevens Institute of Technology)*
11:20 – 11:45	**ABACUS : Audio Based Access Control Utility for Smarthomes** *Abrar S. Alrumayh, Sarah M. Lehman, Chiu C. Tan (Temple University)*
11:45 – 11:10	**Virtual Machine Migration for IoT Applications** *Yutao Tang (Sam's Club Lab); Zhengrui Qin (Northwest Missouri State University); Shanhe Yi (VMWare); Qun Li (College of William and Mary)*
12:10 – 13:30	**Lunch**
13:40 – 15:20	**Session II – WoT Control and Scheduling** Session Chair: Zhengui Qin *(Northwest Missouri State University)*
13:40 – 14:05	**Zone of Control: The Basic Computing Unit for Web of Everything** *Xiaohui Peng(Institute of Computing Technology, Chinese Academy of Sciences); Weisong Shi (Wayne State University)*
14:05 – 14:30	**Towards Efficient Real-Time Decision Support at the Edge** *Kyoung Don Kang (Binghamton University)*
14:30 – 14:55	**Energy, Latency and Staleness Tradeoffs in AI-Driven IoT** *Naveen Tumkur Ramesh Babu, Christopher Stewart (The Ohio State University)*
14:55 – 15:20	**Keyword-based information retrieval for the WoT** *George Xylomenos, Evangelos Zafeiratos, Marios Prokopakis (Athens University of Economics and Business)*

EdgeSP Program

SATURDAY, NOV 9 (Washington III)	
08:15 - 08:30	**Introduction and Opening Remarks** Speaker: Yiran Chen *(Duke University)*
08:30 - 10:00	**Keynote Session** Moderator: Yiran Chen *(Duke University)*
08:30 – 09:15	**Keynote Speech 1 - A Vision towards Pervasive Edge Computing** Yuanyuan Yang *(National Science Foundation)*
09:15 – 10:00	**Keynote Speech 2 - Unified Memory-Computing Architecture with Memristive Devices** Qing Wu *(Air Force Research Laboratory)*
10:00 – 10:45	**Coffee Break**
10:45 - 12:00	**Session I**
10:45 – 11:10	**Towards Security-as-a-Service in Multi-Access Edge** *Tourani (Saint Louis University), Austin Bos (New Mexico State University), Satyajayant Misra (New Mexico State University), Flavio Esposito (Saint Louis University)*
11:10 – 11:35	**Homoglyph Attack Detection with Unpaired Data** *Yiwei Lu (University of Manitoba), Mahesh Kumar K (University of Manitoba), Noman Mohammed (University of Manitoba), Yang Wang (University of Manitoba)*
11:35 – 12:00	**Scalayzer: A Portable Tool for Vulnerability Analysis in Scala** *Mohammadreza Ashouri (University of Potsdam), Christoph Kreitz (University of Potsdam)*
12:00 – 13:30	**Lunch**
13:30 – 15:00	**Session II**
13:30 – 13:55	**A Moving Target Defense against Adversarial Machine Learning** *Abhishek Roy (UC Davis), Anshuman Chhabra (UC Davis), Charles Kamhoua (U.S. Army Research Laboratory (ARL)), Prasant Mohapatra (UC Davis)*
13:55 – 14:20	**Informer: Irregular Traffic Detection for Containerized Microservices RPC in the Real World** *Jiyu Chen (UC Davis), Heqing Huang (Bytedane Inc), Hao Chen (UC Davis)*
14:20 – 14:45	**SDN-based Edge Computing Security: Detecting and Mitigating Flow Rule Attacks** *Sonali Sen Baidya (Texas Tech University), Rattikorn Hewett (Texas Tech University)*
14:45 – 14:50	**Closing Remarks**
14:50 – 15:00	**Coffee Break**