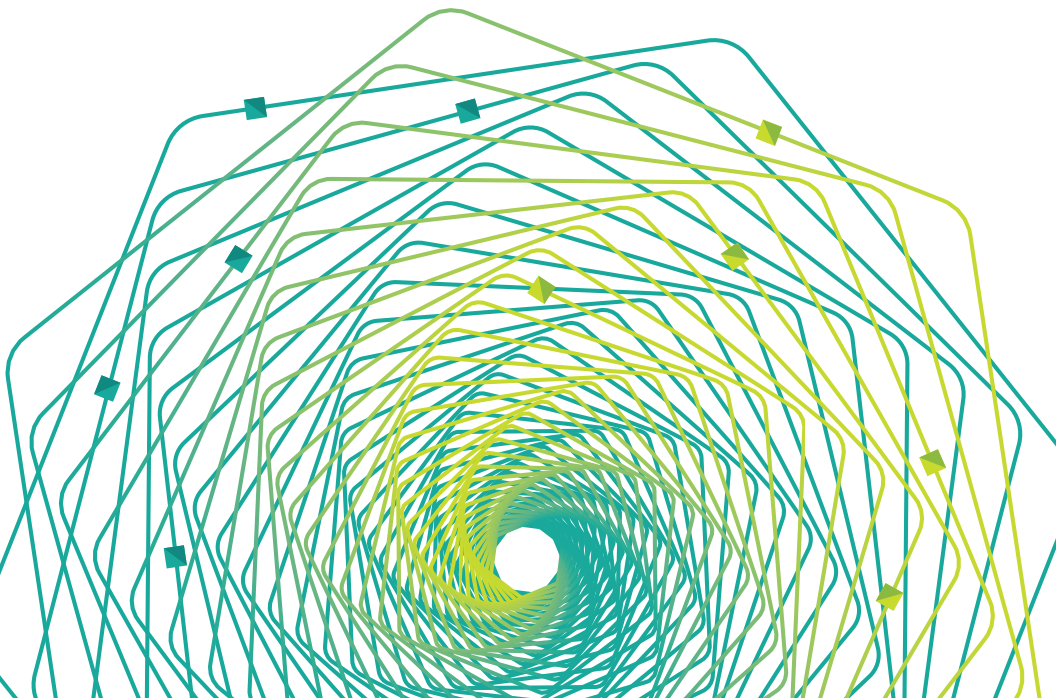




Research Faculty Summit 2018

Systems | Fueling future disruptions

Conference Guide



Welcome

Dear Colleagues,

Welcome to the 2018 Microsoft Research Faculty Summit! We are extremely excited about this, our nineteenth annual Faculty Summit. As in past years, we look forward to the lively exchange of ideas as we delve into broad, open challenges in Systems computing. Central to this year's theme—Systems | Fueling Future Disruptions—the summit will present cutting-edge technology and research from Microsoft product and research groups.

This program is designed to create dialog in a breadth of topic areas. In addition to examining Systems from many directions, the program includes sessions on such wide-ranging topics as the Intelligent Edge, where IoT and the cloud converge for low latency applications, self-tuning AI systems, and not just quantum computers, but quantum systems. Plus, the exploration of confidential computing, and trends in blockchain technologies.

The Microsoft Research Faculty Summit is one of those rare opportunities to network with leading researchers from around the globe. We hope you enjoy the chance to broaden your engagement across this rich field, as well as all the Microsoft employees and researchers that will be attending.

Whether this is your first Research Faculty Summit or you've been here before, we think you'll be inspired by the breadth of expertise and diversity of perspectives among your fellow attendees.

On behalf of the Microsoft team, we would like to personally thank you for joining us this year.

Warm regards,



Dan Fay

Research Faculty Summit Co-Chair
Senior Director,
Microsoft Research



Donald Kossmann

Research Faculty Summit Co-Chair
Distinguished Scientist and Director of
Redmond Lab, Microsoft Research

Wednesday, August 1

7:30–8:30	Breakfast	MCKINLEY
8:30–9:00	Welcome and Introduction Sandy Blyth, Managing Director, Microsoft Research; Donald Kossmann, Director of Redmond Lab, Microsoft Research	KODIAK
9:00–10:00	Inside Microsoft Azure Datacenter Architecture Mark Russinovich, Chief Technology Officer, Microsoft Azure	KODIAK
10:00–10:15	Transition Break	
Breakout Sessions		
10:15–11:45	Database and Data Analytic Systems Chair: Surajit Chaudhuri Speakers: Tim Kraska, Andy Pavlo, Matei Zaharia	CASCADE
10:15–11:45	Hardware-accelerated Networked Systems Co-Chairs: Yibo Zhu and Hitesh Ballani Speakers: Tom Anderson, Hitesh Ballani, Daniel Blumenthal, Sambhrama Mundkur	RAINIER
10:15–11:45	Verification and Secure Systems Chair: Chris Hawblitzel Speakers: Adam Chlipala, Ed Nightingale, Nikhil Swamy	ST. HELENS
11:45–1:00	Networking Lunch: One Table / One Topic	MCKINLEY
Breakout Sessions		
1:00–2:30	Free Inference and Instant Training: Breakthroughs and Implications Co-Chairs: Matthai Philipose and Amar Phanishayee Speakers: Geoff Gordon, Michael Jordan, Christopher Re, Vivienne Sze	CASCADE
1:00–2:30	Future of Cloud Storage Systems Chair: Ant Rowstron Speakers: Luis Ceze, Aaron Ogus, Ant Rowstron, Steven Swanson	RAINIER
1:00–2:30	AI for AI Systems Co-Chairs: Debadeepta Dey and Dan Bohus Speakers: Debadeepta Dey, Eric Horvitz, Joseph Gonzalez, Virginia Smith	ST. HELENS

2:30–3:00 Networking Break

Breakout Sessions

3:00–4:15 **The Good, the Bad, and the Ugly of ML for Networked Systems** CASCADE

Chair: Ganesh Ananthanarayanan
Speakers: Bruce Maggs, Dave Maltz, Balaji Prabhakar, Keith Winstein

3:00–4:15 **Programmable Hardware for Distributed Systems** RAINIER

Chair: Dan Ports
Speakers: Gustavo Alonso, Simon Peter, Dan Ports

3:00–4:15 **Continuous Deployment: Current and Future Challenges** ST. HELENS

Chair: Brendan Murphy
Speakers: Chap Alex, Jen Beckmann, Laurie Williams

4:15–4:30 Transition Break

4:30–5:05 Entrepreneurship and Systems Research KODIAK

Moderator: Ranveer Chandra, Principal Researcher, Microsoft Research
Panelists: Dawn Song, Professor, University of California, Berkeley; Matei Zaharia, Assistant Professor, Stanford University and Co-founder, Databricks

5:05–5:45 The Art of Building a Reliable Cloud Network KODIAK

Albert Greenberg, Corporate Vice President, Microsoft Azure Networking

6:00–6:30 Travel to Dinner

6:30–9:00 Lakeside Barbeque at Hyatt Regency Lake Washington

Thursday, August 2

7:30–8:30	Breakfast	MCKINLEY
8:30–9:00	Technology Showcase - Lightning Round Dan Fay, Senior Director, Microsoft Research	KODIAK
9:00–9:45	Knowledge Systems and AI David Ku, Corporate Vice President, Microsoft Artificial Intelligence & Research	KODIAK
9:45–10:00	Transition Break	
Breakout Sessions		
10:00–11:30	Intelligent Edge Chair: Victor Bahl Speakers: Mung Chiang, Umakishore Ramachandran, Arjmand Samuel, Lin Zhong	ST. HELENS
10:00–11:40	Confidential Computing Chair: Manuel Costa Speakers: Srin Devadas, Peter Pietzuch, Mark Russinovich, Dawn Song	RAINIER
10:00–12:00	CPU & DRAM Bugs: Attacks & Defenses Co-Chairs: Stefan Saroiu and Alec Wolman Speakers: Margaret Martonosi, Christopher Ertl, Onur Mutlu	CASCADE
11:30–2:00	Technology Showcase Chair: Sean Kuno, Research Program Manager, Microsoft Research	HOOD/ BAKER
12:00–1:00	Networking Lunch: One Table / One Topic	MCKINLEY
Breakout Sessions		
1:00–1:30	Micro Co-design for Efficient Cloud Infrastructure Speaker: Muthian Sivathanu	LASSEN
1:30–2:00	From Paper to Production: Privacy Compliance Systems at Scale Speaker: Saikat Guha	LASSEN

Breakout Sessions

2:00–3:15 **Quantum Computers: Software and Hardware Architecture** CASCADE
Chair: Matthias Troyer
Speakers: Douglas Carmean, Torsten Hoefler, Margaret Martonosi, David Reilly

2:00–3:15 **AI Infrastructure and Tools** RAINIER
Speakers: Yang Fan, Ming Wu

2:00–3:15 **Current Trends in Blockchain Technology** ST. HELENS
Chair: Arvind Arasu
Speakers: Carsten Binnig, Srinath Setty, Dawn Song

3:15–3:45 Networking Break

3:45–4:30 Computing Innovation and Diversity of Thought KODIAK
Chair: Vani Mandava, Director, Data Science, Microsoft Research
Moderator: Lucy Sanders, CEO and Co-founder of the National Center for Women & Information Technology
Panelists:
Abolade Gbadegesin, Distinguished Engineer, Microsoft;
Jim Kurose, Assistant Director, National Science Foundation;
Margaret Martonosi, Professor of Computer Science, Director, Keller Center for Innovation in Engineering Education, Princeton University

4:30–5:15 Systems Research | Fueling Future Disruptions KODIAK
Donald Kossmann, Director of Redmond Lab, Microsoft Research

Technology Showcase

- 1 Platform for Situated Intelligence
- 2 High-Fidelity Network Validation for C
- 3 Receptionist Assistant Robot – Strategic Prototyping Team
- 4 Resource Central: Toward Intelligent Clouds
- 5 Prometheus: Co-Designing Distributed Systems and Datacenter Hardware
- 6 FaRM
- 7 Optical Networking Innovation at Microsoft
- 8 Project Fiddle
- 9 Azure Confidential Computing
- 10 AI for Earth –Species Recognition APIs
- 11 The Seven Properties of Highly Secured Devices
- 12 OpenPAI: Open Source Initiative for AI Platform in China
- 13 COCO: Confidential Consortium Blockchains
- 14 Confidential AI: Secure Multi-party Artificial Intelligence
- 15 Empowering the Quantum Revolution with Q#
- 16 Private Compute
- 17 FarmBeats: Empowering Farmers with Low-Cost Digital Agriculture Solutions
- 18 Project Kinect for Azure Depth Sensor Technology Demo
- 19 High Fidelity Simulations: The Critical Path to Real-World AI

Pop-up Kiosks

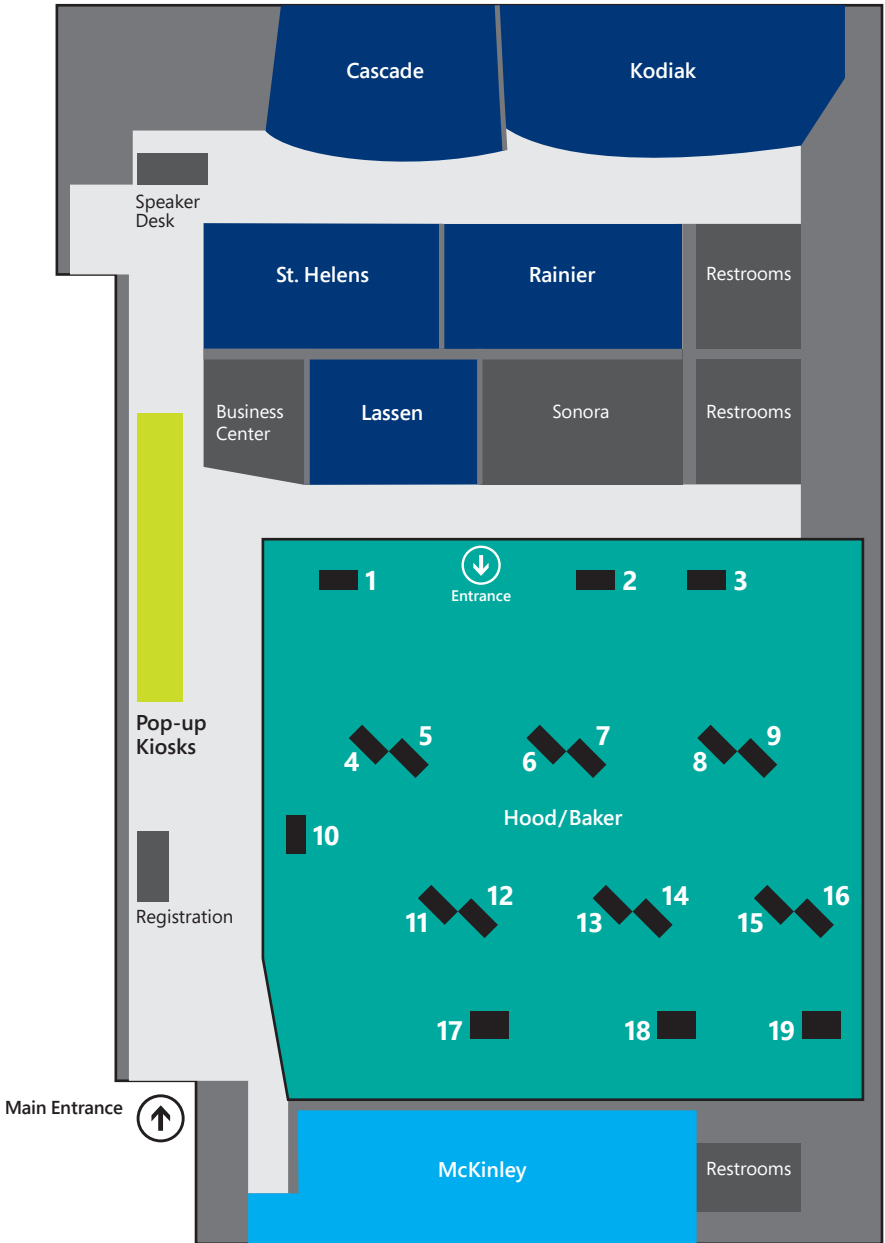
Visit the pop-up kiosks, which will change throughout the day, to learn about new academic programs, technologies, and more.

One Table/One Topic

Join Distinguished Engineers and Distinguished Scientists for an informal roundtable discussion at lunch on Wednesday, August 1. Each table will cover a designated topic hosted by Microsoft experts.

Map

Microsoft Conference Center
Building 33



Microsoft Research

Where leading minds in technology research tackle complex problems to improve lives.



Microsoft Research is where leading scientists and engineers have the freedom and support to propel discovery and innovation. Here, they pursue and publish curiosity-driven research in a range of scientific and technical disciplines that can be translated into products. With access to vast computing power, global multi-disciplinary teams tackle complex problems that drive breakthrough technologies and improve lives.



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