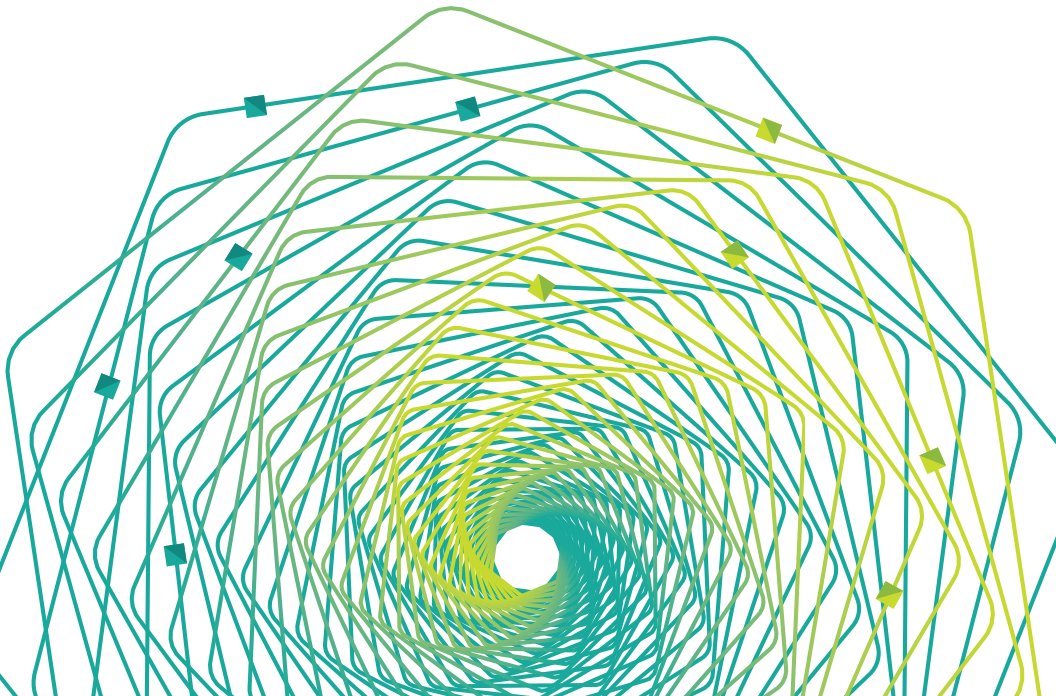
Microsoft

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** Chair: Ganesh Ananthanarayanan Speakers: Bruce Maggs, Dave Maltz, Balaji Prabhakar, Keith Winstein	CASCADE
3:00–4:15	**Programmable Hardware for Distributed Systems** Chair: Dan Ports Speakers: Gustavo Alonso, Simon Peter, Dan Ports	RAINIER
3:00–4:15	**Continuous Deployment: Current and Future Challenges** Chair: Brendan Murphy Speakers: Chap Alex, Jen Beckmann, Laurie Williams	ST. HELENS
4:15–4:30	**Transition Break**	
4:30–5:05	**Entrepreneurship and Systems Research** 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	KODIAK
5:05–5:45	**The Art of Building a Reliable Cloud Network** Albert Greenberg, Corporate Vice President, Microsoft Azure Networking	KODIAK
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: Srini 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** Chair: Matthias Troyer Speakers: Douglas Carmean, Torsten Hoefler, Margaret Martonosi, David Reilly	CASCADE
2:00–3:15	**AI Infrastructure and Tools** Speakers: Yang Fan, Ming Wu	RAINIER
2:00–3:15	**Current Trends in Blockchain Technology** Chair: Arvind Arasu Speakers: Carsten Binnig, Srinath Setty, Dawn Song	ST. HELENS
3:15–3:45	**Networking Break**	
3:45–4:30	**Computing Innovation and Diversity of Thought** 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	KODIAK
4:30–5:15	**Systems Research | Fueling Future Disruptions** Donald Kossmann, Director of Redmond Lab, Microsoft Research	KODIAK

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

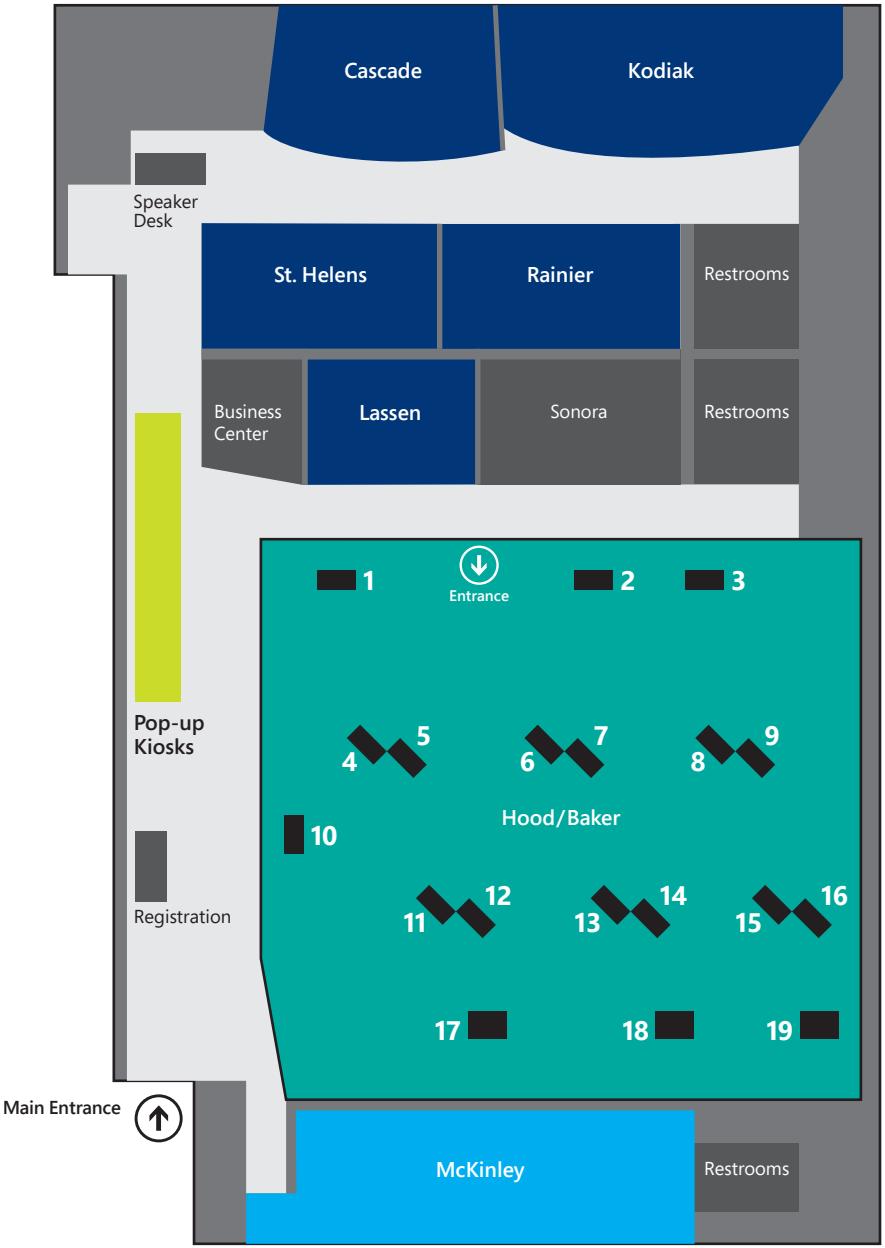
Visit the pop-up kiosks, which will change throughout the day, to learn about new academic programs, technologies, and more.

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



Join the conversation @MSFTResearch #MSFTFacSumm #FutureDisrupt

Microsoft Research

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

Microsoft.com/Research

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.

Careers

Imagine having the freedom and resources to pursue and publish curiosity-driven research that tackles complex problems to improve lives. **aka.ms/msrcareers**

Events

Connect with our researchers at conferences and Microsoft Research events around the world. **aka.ms/msrevent**

Microsoft Research Blog

Read in-depth technical and notable articles from our researchers, scientists, and engineers. **aka.ms/msrblog**

Microsoft Research Podcast

Listen in on conversations that bring you closer to the cutting-edge of technology research and the scientists behind it. **aka.ms/msrpod**

Programs

Further your research with fellowships, grants, and opportunities. **aka.ms/msrprog**

Microsoft Research Group | @msft_research | microsoftresearch

MicrosoftResearch | @MSFTResearch | #msftresearch

MicrosoftFacultySummit.com

Connect with us:

- MicrosoftResearch
- @MSFTResearch
- microsoftresearch
- Microsoft Research Group
- @msft_research
- #msftresearch