

MIT Industrial Liaison Program Faculty Knowledgebase Report

MIT Next Generation Communications Forum

October 28, 2025 9:00 am - 3:30 pm

8:30 AM

Registration

9:00 AM

Welcome and Introduction

Steven Palmer

Senior Director, [MIT Corporate Relations](#)



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[MIT Corporate Relations](#)

Steve Palmer is a Senior Director within MIT's Office of Corporate Relations. Steven comes to OCR with many years of experience building relationships, advancing diplomacy, and seeking new business initiatives in both the public and private sectors. He has spent his career highlighting and translating technological issues for policy makers, engineers, analysts, and business leaders. Steven has worked in government, industry, and academia in the U.S. and abroad. He is also an Executive Coach at MIT Sloan and Harvard Business School. Steven earned his Bachelor of Science at Northeastern University, and his M.B.A. at MIT Sloan where he was in the Fellows Program for Innovation and Global Leadership.

9:10 AM

Connecting Up, Through the Decades, Through the Layers

David Clark

When we started designing the Internet, local networks and personal computers were a vision lurking inside research labs like Xerox PARC. We were hooking up large time-sharing systems. Along one dimension, the trajectory of the Internet has been expanding our vision of what to hook up. The PC. The home. With broadband. "Things." The phone in your pocket.

I am actually an optimist about some of these endeavors. We are getting rural broadband. Slowly, but it is happening. But a lesson I learned, starting around 1995, is that the technology is necessary, but it was money that made the future happen. Every time I thought some new technology would shape the future, I learned this lesson again. I hired an economist to work with me.

More recently, my focus has shifted from the physical and protocol layers to the higher layers, where what we are connecting up is not computers but people. We were techno-optimists when we designed the Internet, but what we were optimistic about was the ways people would use it. I now see that this optimism must be tempered with some concern. In 1995, I hired an economist to work with me. I am now collaborating with a behavioral psychologist to understand why people behave as they do and how technology and people interact.

In this talk, I will explore my own trajectory of learning over the past 50 years and offer some suggestions for the future.

9:40 AM

Resource-Efficient Semiconductor Manufacturing and Operation: The Role of Integrated Photonics and Co-Packaged Optics

Anu Agarwal

National security and economic prosperity cooperatively provide protection and creative stimulus for our nation's economic growth. However, the path of growth continually confronts boundaries of cost, materials availability, and business viability. Solutions to these boundaries are most critical to maintaining the 40 years of exponential revenue growth of the microchip industry. The requirement for high-performance microchip systems underpins the communication, computing, and learning resources for the entire US economy. The urgency to align microchip system performance scaling with a commercially viable manufacturing value chain dominates business and technology decisions today.

FUTUR-IC, with its participants and partners in industry, government, and academia, provides a transformative industry-driven solution that simultaneously optimizes across three critical dimensions of System Technology, Value Chain Innovation, and Workforce Development, to ensure business continuity and national security.

Frontier constraints in the microchip industry are: 1) Technology: Enhanced microchip functionality for next generation applications such as AI, 6G, LiDAR etc. can no longer depend solely on shrinking the dimensions of a transistor; PFAS mitigation is essential; 2) Value Chain Innovation: A flexible template for accounting on the use of electricity, water, materials, etc. across the microchip industry value chain can help optimize resource-usage; 3) Workforce: Leadership from a new STEM- and resource-efficiency-skilled workforce is required to reshore and maintain domestic leadership in the semiconductor industry.

Concurrently engineered solutions are expected to power the next 40 years of progress for the semiconductor industry.

Lionel Kimerling

10:30 AM

Overview of the MIT Quantum Initiative

Danna Freedman

10:50 AM

Networking Break

11:10 AM

Startup Lightning Talks
Irina Gaziyeva
Program Coordinator, [MIT Startup Exchange](#)



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Program Coordinator
[MIT Startup Exchange](#)

Irina Gaziyeva comes to Corporate Relations from the Mechanical Engineering Department at MIT where she worked 10 years as Administrative Assistant where she has supported four senior faculty members and their research groups (20-25 graduate students). Since 2018, Irina has acted as program coordinator, teaming-up with the program manager and program faculty lead for the MechE Alliance program. She has facilitated 45+ virtual seminars, workshops, and mentoring events in this informal role. Irina has also actively connected members of the MechE community to support student career development, mentorship, and networking opportunities with MIT alumni and industry. Before MIT, Irina held positions as Administrative Assistant and Member Representative at Brookline Dental and Tufts Health plan, respectively. Irina has also been a Community Organizer in Worcester, MA.

Irina earned her B.A., Management (with Innovation & Entrepreneurship track) at Clark University in Worcester, and her M.S., Program and Project Management from Brandeis University in Waltham. She has received many awards at MIT for outstanding service, and she has extensive community volunteer work to her credit.

Shahriar Khushrushahi

Juan Viera Garcia

Marco Ganouna

Laura Andre

12:00 PM

Lunch with Startup Exhibition

1:00 PM

Panel Discussion: Future of Communications
Steve Whittaker

Program Director, [MIT Industrial Liaison Program](#)



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Steve Whittaker has almost 40 years' of experience in R&D, innovation, and strategy. He has a background in computer science and AI, coupled with very broad interests in emerging technologies and their impact on individuals, organizations, and society.

Before joining MIT, Steve was responsible for BT's partnerships with US research universities and business schools. He was recently awarded the inaugural MIT CSAIL Connector Award for industry partnerships, and he was a resident visiting scientist/research affiliate at the MIT Media Lab for more than a decade.

Prior to relocating to the US, Steve held various research, research management, strategy and business development roles at BT's Adastral Park research labs.

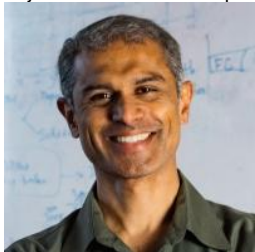
Sanjay Bajekal

Shahriar Khushrushahi

David Clark

1:50 PM

Glia: An AI for Autonomous System Design and Optimization
Hari Balakrishnan
Fujitsu Professor of Computer Science



Hari Balakrishnan
Fujitsu Professor of Computer Science

[Hari Balakrishnan](#) is the Fujitsu Professor of Computer Science at MIT and a Director of MIT's Center for Wireless Networks and Mobile Computing. His research is in networked computer systems, with current interests in networking, sensing, and perception for sensor-equipped mobile devices connected to cloud or edge services running in datacenters. He has made many highly-cited contributions to mobile and sensor computing, Internet transport and routing, overlay networks and P2P systems, and data management.

In 2010, based on the CarTel project, Balakrishnan co-founded [Cambridge Mobile Telematics](#), a company that uses mobile sensing, statistical methods, AI, and behavioral science to make roads safer by making drivers better. Over the past few years, CMT has become the world's largest telematics service provider, serving millions of users in 25 countries via partnerships with insurers, cellular carriers, rideshare companies, and automobile makers. He was an advisor to [Meraki](#) from its inception in 2006 to its acquisition by Cisco in 2012. In 2003, Balakrishnan co-founded [StreamBase Systems](#) (acquired by TIBCO), the first high-performance commercial stream processing (aka complex event processing) engine.

Balakrishnan received his PhD in 1998 from UC Berkeley and a BTech in 1993 from IIT Madras, which named him a distinguished alumnus in 2013. He was elected to the National Academy of Engineering in 2015 and to the American Academy of Arts and Sciences in 2017. His honors include the IEEE Kobayashi Computers and Communications Award (2021), Fellow of the ACM (2008), Fellow of the IEEE (2020), Sloan Fellow (2002), and the ACM dissertation award (1998). He has received several best-paper awards including the IEEE Bennett paper prize (2004), and six "test of time" awards for papers with long-term impact from ACM SIGCOMM (2011), SIGOPS (2015), SIGMOD (2016), and SIGMOBILE (2017, 2018), and SenSys (2019). He has also been honored for excellence in research and teaching at MIT: the [Harold E. Edgerton faculty achievement award](#) (2003), the HKN best instructor award (2018), the Jamieson award (2012), the Junior Bose teaching award (2002), and the Spira teaching award (2001).

[View full bio](#)

Can an AI autonomously design mechanisms for computer systems on par with the creativity and reasoning of human experts? We have developed [Glia](#), an AI architecture for networked systems design that uses large language models (LLMs) in a human-inspired, multi-agent workflow. Each agent specializes in reasoning, experimentation, and analysis, collaborating through an evaluation framework that grounds abstract reasoning in empirical feedback. Unlike prior ML-for-systems methods that optimize black-box policies, Glia generates interpretable designs and exposes its reasoning process. When applied to a distributed GPU cluster for LLM inference, it produces new algorithms for request routing, scheduling, and auto-scaling that perform at human-expert levels while yielding novel insights into workload behavior. Crucially, it achieves these results in 10x-100x less time than human experts. Our results suggest that by combining reasoning LLMs with structured experimentation, AI can produce creative and understandable designs for difficult problems in computer and AI systems design.

This is based on joint work with Prof. Mohammad Alizadeh and our students.

2:30 PM

Networking Break

2:50 PM

Compute Above the Clouds: Laser Comms and 5G NTN for AI-Driven Constellations

Kerri Cahoy

Emerging space networks—from Starlink to Kuiper—are paving the way toward a programmable fabric in low Earth orbit. This talk explores how dynamic tasking and onboard AI/edge compute let satellites determine how to efficiently use their resources for sensing and decide whether what they have sensed is useful and when to deliver it, all while laser communications provide low-latency crosslinks and supplement high-rate downlinks. We talk about recent progress in onboard autonomy and outline future architectures that fuse 5G NTN standards with optical crosslinks for resilient space-to-space and space-to-ground connectivity, enabling real-time tipping/cueing, federated learning across constellations, and “mission apps” deployed on-orbit. Work is underway with lab demos and simulations building toward field flight demos of capable pointing, acquisition, and tracking, resource scheduling, and interoperability that can scale to constellations. The result is a blueprint toward autonomous, service-oriented space networks that envision satellites as cooperative, updatable nodes in a global communications and sensing cloud.

3:30 PM

Networking