

MIT Industrial Liaison Program Faculty Knowledgebase Report

2024 MIT Digital Technology and Strategy Conference

September 17, 2024 - September
18, 2024

Day 1 | September 17, 2024

8:00 AM

Registration and Light Breakfast

9:00 AM

Welcome and Introduction
Gayathri Srinivasan
Executive Director, [MIT Corporate Relations](#)



Gayathri Srinivasan
Executive Director
[MIT Corporate Relations](#)

Dr. Srinivasan is a distinguished scientist who received her PhD in Microbiology from The Ohio State University in 2004, where she contributed to the discovery of the 22nd amino acid, Pyrrolysine (2002). She first came to MIT as an NIH Postdoctoral Fellow in Prof. Tom Rajbhandary's lab, where her research focused on understanding protein synthesis mechanisms in Archaea.

Dr. Srinivasan subsequently moved into the business development and technology licensing space, serving in MIT's Technology Licensing Office, where she helped commercialize technologies in medical devices and alternative energies. She then moved to UMass Medical School's Office of Technology Management in 2009 and to Emory University in Atlanta in 2014 as the Director of Public and Private Partnerships for the Woodruff Health Sciences Center. In 2019, Dr. Srinivasan joined Emory's Office of Corporate Relations as Executive Director, and in 2021, she led the Office of Corporate and Foundation Relations.

Graham Rong
Director, [MIT Corporate Relations](#)



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Dr. Rong is a Director of Corporate Relations at MIT. He currently supervises a group of ILP program directors who promote and manage the interactions and relationships between the research at MIT and companies worldwide to help them stay abreast of the latest developments in technology and business practices.

Previously, Dr. Rong founded IKA, LLC. He has led corporate development and product innovation and provided strategic advice to companies in corporate strategy, IT leadership, digital transformation, AI, enterprise content management, and customer relationships. He held senior roles in Harte-Hanks and Vignette Corporation. He held an EU postdoctoral research fellowship at the University of Edinburgh in Scotland where he started global collaborative research.

Dr. Rong is on the board of multiple organizations, including the MIT Sloan Alumni Association of Boston from 2009 to 2012. He chaired MIT Sloan CIO Symposium from 2009-2011. He is a senior expert invited by international organizations.

Dr. Rong holds an M.B.A. in global and innovation leadership from the MIT Sloan School of Management and a Ph.D in numerical computing from the University of Guelph in Canada.

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9:15 AM

Keynote: Technology and Inequality in the Age of AI
Simon Johnson
Ronald A Kurtz (1954) Professor of Entrepreneurship,
Professor of Global Economics and Management, [MIT Sloan School of Management](#)



Simon Johnson
Ronald A Kurtz (1954) Professor of Entrepreneurship,
Professor of Global Economics and Management
[MIT Sloan School of Management](#)

Simon Johnson is the *Ronald A. Kurtz (1954) Professor of Entrepreneurship* at the MIT Sloan School of Management, where he is head of the Global Economics and Management group. In 2007-08 he was chief economist at the International Monetary Fund, and he currently co-chairs the [CFA Institute Systemic Risk Council](#). In February 2021, [Johnson joined the board of directors of Fannie Mae](#).

Johnson's most recent book, with Daron Acemoglu, [Power and Progress: Our 1000-Year Struggle Over Technology and Prosperity](#), explores the history and economics of major technological transformations up to and including the latest developments in Artificial Intelligence.

His previous book, with Jonathan Gruber, [Jump-Starting America: How Breakthrough Science Can Revive Economic Growth and the American Dream](#), explained how to create millions of good new jobs around the U.S. through renewed public investment in research and development. This proposal attracted [bipartisan support](#).

Johnson was previously a senior fellow at the Peterson Institute for International Economics in Washington, D.C., a cofounder of [BaselineScenario.com](#), a member of the Congressional Budget Office's Panel of Economic Advisors, and a member of the Federal Deposit Insurance Corporation's Systemic Resolution Advisory Committee. From July 2014 to early 2017, Johnson was a member of the Financial Research Advisory Committee of the U.S. Treasury's Office of Financial Research (OFR), within which he chaired the Global Vulnerabilities Working Group.

"[The Quiet Coup](#)" received over a million views when it appeared in *The Atlantic* in early 2009. His book [13 Bankers: the Wall Street Takeover and the Next Financial Meltdown](#) (with James Kwak), was an immediate bestseller and has become [one of the mostly highly regarded books on the financial crisis](#). Their follow-up book on U.S. fiscal policy, [White House Burning: The Founding Fathers, Our National Debt, and Why It Matters for You](#), won praise across the political spectrum. Johnson's academic research papers on long-term economic development, corporate finance, political economy, and public health are widely cited.

"For his articulate and outspoken support for public policies to end too-big-to-fail", [Johnson was named a Main Street Hero](#) by the Independent Community Bankers of America (ICBA) in 2013.

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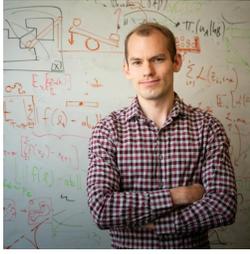
According to leaders of the tech sector, the arrival of Artificial Intelligence will "change everything" – about productivity growth, human development, and shared prosperity. In their recent book, *Power and Progress: Our Thousand Year Struggle Over Power and Prosperity*, Simon Johnson and Daron Acemoglu take the long view – putting the latest AI developments into historical context. AI could help boost the wages and living standards of everyone, but there is a very real danger that it will primarily bring a lot more automation and further widening of income inequality.

Simon will talk about the intellectual and policy debates swirling around AI both in the US and around the world. Can we really create "Pro-Worker AI"? What would that take?

9:55 AM

Keynote: Generative Models as a Data Source for AI Systems
Phillip Isola

Associate Professor, [Department of Electrical Engineering and Computer Science](#)



Phillip Isola

Associate Professor, [Department of Electrical Engineering and Computer Science](#)

Phillip Isola is an Associate Professor in MIT's Department of Electrical Engineering and Computer Science and an investigator in the Computer Science and Artificial Intelligence Laboratory. His work focuses on why we represent the world the way we do and how we can replicate these abilities in machines. Before coming to MIT, he was a visiting research scientist at OpenAI. He earned a PhD in brain and cognitive sciences at MIT and spent two years as a postdoc at the University of California, Berkeley.

Generative models can now produce realistic and diverse synthetic data in many domains. This makes them a viable choice as a data source for training downstream AI systems. Unlike real data, synthetic data can be steered and optimized via interventions in the generative process. I will share my view on how this makes synthetic data act like data++, data with additional capabilities. I will discuss the advantages and disadvantages of this setting, and show several applications toward problems in computer vision and robotics.

10:35 AM

MIT Professional Education
Myriam Joseph

Manager, Business Development and Marketing, [MIT Professional Education](#)

10:40 AM

Networking Break

11:05 AM

AI for Chemistry and Materials: Are We There Yet?
Rafael Gomez-Bombarelli

Paul M. Cook Career Development Professor,
Associate Professor, [MIT Department of Materials Science and Engineering](#)



Rafael Gomez-Bombarelli

Paul M. Cook Career Development Professor,
Associate Professor, [MIT Department of Materials Science and Engineering](#)

Professor Gómez-Bombarelli received his BS, MS, and PhD in chemistry from the University of Salamanca in Spain, followed by postdoctoral work at Heriot-Watt University in Scotland. As a postdoc at the Aspuru-Guzik lab at Harvard University he worked on high-throughput virtual screening for organic light-emitting diode (OLED) and battery electrolytes. He entered industry in 2016 as a senior researcher at Japanese technology company Kyulux, applying Harvard-licensed technology to build commercial OLED products. He joined the DMSE faculty in 2018.

Professor Gómez-Bombarelli's work has been featured in publications such as *MIT Technology Review* and the *Wall Street Journal*. He is co-founder of Calculario, a materials discovery company that uses quantum chemistry and machine learning to target advanced materials in a range of high-value markets.

[View full bio](#)

AI is having real-world impact in the digital lives of consumers and the operations of companies. Porting over these gains to industries with more tangible products such as drug discovery in biotech, commodity chemicals and materials for energy and sustainability, or manufacturing is an exciting opportunity. Here, we will discuss the current state and the opportunities for the application of (generative) AI in the context of chemistry and materials. In contrast with tech, these are capex-intensive, risk-averse industries where AI needs to close an "execution gap" between the digital and physical worlds for value creation. We will identify paths to remove existing technical and cultural bottlenecks.

11:45 AM

Startup Exchange Lightning Talks

Catarina Madeira

Director, [MIT Startup Exchange](#)



Catarina Madeira

Director

[MIT Startup Exchange](#)

Catarina has been working with the Cambridge/Boston startup ecosystem for over 10 years and joined Corporate Relations with a solid network in the innovation and entrepreneurial community. Prior to MIT, she was part of the team that designed and launched the startup accelerator IUL MIT Portugal, which was later rebranded as Building Global Innovators. She was based in Lisbon and worked in direct relation with the Cambridge team. She held positions including Operations Coordinator, Program Manager, and Business Developer. The accelerator soon achieved steady growth in large part due to the partnerships that Catarina led with regional and global startup ecosystems. After that, she worked at NECEC, leading a program that connects cleantech startups and industry. In this role, she developed and built a pipeline of startups and forged strong relationships with both domestic and European companies. She has also held positions in Portugal and France, including at Saboaria e Perfumaria Confiança and L'Oréal as Technical Director and Pharmacist. Catarina earned her bachelor's in chemistry and pharmaceutical sciences in Portugal. She went on to earn her Master of Engineering for Health and Medicines in France.

Katie Trauth Taylor

John Wass

Sami Shalabi

Natalie Gil

Sid Probst

Daphne Pariser

Stewart Jamieson

Serge Vilvovsky

Richard Rabbat

Manisha Mohan

Paul Bosco Jr.

12:45 PM

Lunch with Startup Exhibitors

2:00 PM

Afternoon Introduction
Yui Yashiro
Program Director, [MIT Industrial Liaison Program](#)



Yui Yashiro
Program Director
[MIT Industrial Liaison Program](#)

Before joining MIT Corporate Relations in 2022, Yui Yashiro was Senior Manager, Commercial Insights & Salesforce Operations at Alexion Pharmaceuticals in Boston. As Manager, Commercial Strategy & Operations, she was responsible for reaching group sales targets and leading cultural change projects, including DEI initiatives. Before Alexion, Yashiro was Senior Planning Analyst, Corporate Planning for TeraDiode Inc. (a Panasonic company) in Wilmington, MA, where she led business planning activities. Additionally, she held two roles at Takeda in Tokyo and Osaka. As Chief of Cardiovascular & Metabolic, Shonan Office, Japan Pharma Business Unit, Yashiro was a leader in sales and sales strategy, consistently achieving & surpassing revenue and market share targets for herself and the sales team that she led.

Yashiro earned her B.A. Education & Human Science at Tsukuba University and her MBA at Ohmae Kenichi Graduate School of Business, both in Japan.

2:05 PM

Making Business Sense of AI: Key Questions for Leaders

George F. Westerman

In today's business environment, every leader must consider the potential of artificial intelligence (AI). However, not every leader feels comfortable doing that. In this engaging session, MIT researcher and digital transformation pioneer George Westerman will provide the information you need to talk about AI and make informed decisions confidently. He'll demystify AI and provide an executive-level overview of key categories, including generative AI, deep learning, rule-based systems, and other models. Participants will explore practical applications across various sectors, highlighting the transformative potential and potential risks for customer experience, operations, decision-making, and employee careers. This is not a technical discussion; it's a leadership one that reveals what every leader needs to know about these fast-moving technologies. Audiences will walk away ready to ask the right questions and make the right decisions about leading an organization through the AI revolution.

2:45 PM

Panel Discussion: AI Generation - From Research to Impactful Use Cases
Aude Oliva

Director of Strategic Industry Engagement, [MIT Schwarzman College of Computing](#)
MIT Director, [MIT-IBM Watson AI Lab](#)
Co-lead, [MIT AI Hardware Program](#)
Senior Research Scientist, [CSAIL](#)



Aude Oliva

Director of Strategic Industry Engagement, [MIT Schwarzman College of Computing](#)
MIT Director, [MIT-IBM Watson AI Lab](#)
Co-lead, [MIT AI Hardware Program](#)
Senior Research Scientist, [CSAIL](#)

Aude Oliva, PhD is the MIT director in the MIT-IBM Watson AI Lab and director of strategic industry engagement in the MIT Schwarzman College of Computing, leading collaborations with industry to translate natural and artificial intelligence research into tools for the wider world. She is also a senior research scientist at the MIT Computer Science and Artificial Intelligence Laboratory (CSAIL), where she heads the Computational Perception and Cognition group.

Oliva has received an NSF Career Award in computational neuroscience, a Guggenheim fellowship in computer science and a Vannevar Bush Faculty Fellowship in cognitive neuroscience. She has served as an expert to the NSF Directorate of Computer and Information Science and Engineering on the topic of human and artificial intelligence. She is currently a member of the scientific advisory board for the Allen Institute for Artificial Intelligence. Her research is cross-disciplinary, spanning human perception and cognition, computer vision and cognitive neuroscience, and focuses on research questions at the intersection of all three domains. She earned a MS and PhD in cognitive science from the Institut National Polytechnique de Grenoble, France.

David Cox

Indradeep Ghosh

Ramin Hasani

3:30 PM

MIT Open Learning: Driving Innovation with Generative AI - An MIT xPRO Course

Luke Hobson

3:35 PM

Networking Break

4:00 PM

Digital Twin and AI: Shaping the Future of Real Estate

James Scott

Digital twin technology is finally starting to immerse itself across the real estate sector, transforming the way buildings are designed, constructed, operated, and managed. While this technology has long since promised to deliver significant potential benefits across the life of a building it has also encountered many obstacles in its evolution. What are the true practical applications of this technology which can unlock its significant potential and separate fact from fiction. This presentation will provide those across the real estate industry with the current landscape, looking behind the hype to illustrate the benefits of various digital twin applications across different asset types.

4:40 PM

Scaling Digital Production
John Hart

Department Head and Professor, [MIT Department of Mechanical Engineering](#),
Faculty Co-Director, Manufacturing@MIT



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Department Head and Professor, [MIT Department of Mechanical Engineering](#),
Faculty Co-Director, Manufacturing@MIT

John Hart is Professor of Mechanical Engineering, Head of the Department of Mechanical Engineering, Director of the Laboratory for Manufacturing and Productivity, and Director of the Center for Advanced Production Technologies at MIT. John's research focuses on additive manufacturing, materials processing, and machine design. He is a co-founder of VulcanForms and Desktop Metal and is a Board Member of Carpenter Technology Corporation.

Manufacturing has advanced enormously over the past century; however, today's manufacturing technologies cannot support the next generation of advanced products while further fragmenting global supply chains. I will articulate how digital-first production approaches, combining computational design tools with new process technologies, can allow the industry to rethink the architecture of future production systems. I will also introduce the Manufacturing@MIT Initiative, which brings together MIT faculty and students to develop research programs, education and training curricula, and partnerships to accelerate new manufacturing approaches.

5:20 PM

Networking Reception

Day 2 | September 18, 2024

8:30 AM

Registration and Light Breakfast

8:55 AM

Introduction to Day Two
Graham Rong
Director, [MIT Corporate Relations](#)



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Director
[MIT Corporate Relations](#)

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9:00 AM

Data (AI) is Everybody's Business
Barbara Wixom
Research Director & Principal Research Scientist,
Center for Information Systems Research



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Research Director & Principal Research Scientist,
Center for Information Systems Research

Barbara joined MIT Sloan in June 2013 to serve as a Principal Research Scientist at the MIT Sloan Center for Information Systems Research (CISR). MIT CISR was established in 1974 as a non-profit research group, and it currently is funded by 85 corporate sponsors and patrons. The center undertakes practical research on how firms generate business value from digitization. Barbara's work focuses on how organizations effectively deliver value from their information assets.

Prior to MIT CISR, Barbara was a tenured faculty member at the University of Virginia (UVA) where she taught undergraduate and graduate courses in data management, business analytics, and IT strategy. She is a two-time recipient of the UVA All-University Teaching Award (2002, 2010), which recognizes teaching excellence in professors, particularly those who inspire and motivate students. This honor is especially meaningful to Barbara because she earned her undergraduate degree at the University of Virginia.

Since the mid-90's, Barbara has deeply explored data warehousing, business intelligence, analytics, big data, and AI. Her research ranges from large-scale surveys and meta-analyses to lab experiments and in-depth case studies. Five of her cases have placed in the Society for Information Management Paper Awards competition: First American Corporation (1999), Owens and Minor (2000), Continental Airlines (2004), Sprint (2008), and BBVA (2018). Barbara is a leading academic scholar, publishing in such journals as Information Systems Research; MIT Sloan Management Review; MIS Quarterly; and MIS Quarterly Executive. She presents her work globally to academic and business audiences.

Barbara serves as associate editor of the Business Intelligence Journal, research fellow of The Data Warehousing Institute, and fellow of the Teradata University Network. In 2017, Barbara was awarded the Teradata University Network Hugh J. Watson Award for her contributions to the data and analytics academic community via the Teradata University Network. She is the author of two leading systems analysis and design textbooks, published by John Wiley & Sons, Inc. She is married and blessed with two daughters.

[View full bio](#)

In this session, Dr. Barbara Wixom will describe highlights from her MIT Press book *Data is Everybody's Business*, which was published by MIT Press in September 2023 and included in Forbes's Top 10 Tech Books Of 2023. The book, co-authored with Dr. Cynthia Beath and Leslie Owens, presents the fundamentals of data monetization and features research and insights developed over three decades. Dr. Wixom will present three principles supported by the book's content to guide business leaders when making AI investments: invest in practices to build AI capabilities required for AI, involve all your people in your AI journey, and focus on realizing value from your AI projects.

9:40 AM

Panel Discussion: Skills, Jobs, and LLMs - How Companies are Redesigning Work as they Deploy AI

Ben Armstrong

Executive Director, [MIT Industrial Performance Center](#)



Ben Armstrong

Executive Director

[MIT Industrial Performance Center](#)

Ben Armstrong is the executive director of MIT's Industrial Performance Center, where he co-leads the Work of the Future initiative. His research examines how workers, firms, and regions adapt to technological change. His current projects include a working group on generative AI, as well as a book on American manufacturing competitiveness. His work has been published or featured in academic and popular outlets including the *New York Times*, *Harvard Business Review*, *Forbes*, *Sloan Management Review*, *Times Higher Education*, the *Boston Review*, *Daedalus*, and *Economic Development Quarterly*. He received his PhD from MIT and formerly worked at Google Inc.

Lisa Gevelber

Marco Eijsackers

Prem Natarajan

10:25 AM

Networking Break

10:55 AM

Overview of Media Lab Research

Andy Lippman

Understanding Human-AI Interaction
Pattie Maes

Germeshausen Professor and Professor of Media Technology, [MIT Media Lab](#)
Head, [Fluid Interfaces Research Group](#)



Pattie Maes

Germeshausen Professor and Professor of Media Technology, [MIT Media Lab](#)
Head, [Fluid Interfaces Research Group](#)

Pattie Maes is the Germeshausen Professor of Media Arts and Sciences at the MIT Media Lab. She runs the [Fluid Interfaces research group](#), which does research at the intersection of Human Computer Interaction and Artificial Intelligence with a focus on applications in health, wellbeing and learning. Maes is also a faculty member in [MIT's center for Neuro-Biological Engineering](#). She is particularly interested in the topic of *cognitive enhancement*, or how wearable, immersive and brain-computer interface systems can actively assist people with issues such as memory, attention, learning, decision making, communication, wellbeing, and sleep.

Maes is the editor of four books, and is an editorial board member and reviewer for numerous professional journals and conferences. She has received several awards: Netguru selected her for "Hidden Heroes: the people who shaped technology (2022), Time Magazine has included several of her designs in its annual list of inventions of the year; AAAI gave her the "classic paper 2012" prize, awarded to the most influential AI paper of the year, *Fast Company* named her one of 50 most influential designers (2011); *Newsweek* picked her as one of the "100 Americans to watch for" in the year 2000; *TIME Digital* selected her as a member of the "Cyber Elite," the top 50 technological pioneers of the high-tech world; the World Economic Forum honored her with the title "Global Leader for Tomorrow"; Ars Electronica awarded her the 1995 World Wide Web category prize; and in 2000 she was recognized with the "Lifetime Achievement Award" by the Massachusetts Interactive Media Council. She also received honorary doctorates from the Vrije Universiteit Brussel in Belgium and Open Universiteit, Netherlands, and has given several TED talks.

In addition to her academic endeavors, Maes has been an active entrepreneur as co-founder of several venture-backed companies, including Firefly Networks (sold to Microsoft), Open Ratings (sold to Dun & Bradstreet) and [Tulip Co](#) (privately held). She is an advisor to several early stage companies, including [Earable, Inc.](#) and [Spatial, Inc.](#) Prior to joining the Media Lab, Maes was a visiting professor and a research scientist at the MIT Artificial Intelligence Lab. She holds a bachelor's degree in computer science and a PhD in artificial intelligence from the [Vrije Universiteit Brussel](#) in Belgium.

[View full bio](#)

If we want the current AI hype to live up to its expectations, it is critical that we understand how to integrate AI into a human work and life context. In other words, AI is not just an engineering challenge, it is also a human challenge. How do people respond when making decisions with AI? Are there risks in deskilling and over reliance? Maes' group studies how people respond to working with AI and designs novel interfaces to maximize outcomes of close human-AI collaboration.

11:45 AM

Perspective-Aware AI: Leveraging Others' Personalized Models for Better Decision-Making

Hossein Rahnama

We define perspective-aware computing as an emerging area of computational innovation in which users of the system can view and interact through each other's points of view without the need for a centralized recommendation system. To achieve this, we propose a multi-modal neuro-symbolic graph generation approach to construct personalized models known as "Chronicles" from a user's digital footprint, comprehending an individual's cognitive and behavioral tendencies in diverse contexts. Applications of our approach enable users of a trusted social network to view and interact with information through each other's perspective. In summary, we allow individuals to lend their expertise to each other, and advance classic digital personalization techniques toward more participatory systems. This approach has potential in the design of less-biased recommendation systems in areas such as Digital Immortality, peer-to-peer learning, and in general, decentralized computational social systems.

12:05 PM

Speculative AI

Andy Lippman

Generative AI has matured in the last year to the point where there is constant speculation about its impact on professional and daily life. It is now within the purview of individuals to create convincing replicas of people's voices, images, and actions. We define a deep fake as a synthesized presentation intended to mislead, hence the word "fake." In our work, we use synthesis as a tool for exploration and to provoke thought. We term it "speculative AI" in the sense that while it is not literal it is created for the user's edification as a means to explore options and express ideas. One example is "Next Week Tonight" where we synthesize tomorrow's news to reveal possible impacts of externalities on current events. Another is Open-OpenAI where we draw on what stakeholders assert about AI to express our opinion of what we think they should say.

12:25 PM

Adjournment with Boxed Lunch