

# Eric Horvitz

KDD 2023 Keynote

Title: People and Machines: Pathways to Deeper Human-AI Synergy

Wednesday, August 9th, 8:00-9:30 AM

Video recording of the talk available at:

<https://www.youtube.com/watch?v=HDfxgKcnX9w>

Abstract:

We have not yet achieved the long-term dream of deep human-machine synergy, as envisioned by pioneers of human-computer interaction and AI. I will review advances to date on the path to a “tighter coupling between human and machine,” as JCR Licklider proposed, and highlight challenges and directions for making progress on the charge. I will frame my presentation with recent breakthroughs with large generative language models, such as GPT-4. How can we understand and harness the potential of these new models, while building on earlier advances in data mining and machine learning to advance human-AI collaboration? I will discuss the surprising sparks of more general intelligence that the recent large generative models exhibit, including their powers to perform surprising feats of abstraction, generalization, and composition. I will explore methodological directions for the field, including using generative models as they are, improving them with foundational innovations, integrating them with traditional methods, and extending their capabilities with tools and resources, such as methods for orchestration of prompting and for calling external capabilities. After reviewing opportunities for the generative language models to enhance education, healthcare, and scientific discovery, I will turn to reviewing work to date and directions with human-AI collaboration. I will review four directions for research on human-AI synergy, including coordinating human and AI initiatives, leveraging the complementarity of people and machines, constructing joint models of people and the world, and developing mechanisms for grounding and mutual understanding in human-machine partnerships.

**Bio:** Eric Horvitz serves as Microsoft’s Chief Scientific Officer. He spearheads company-wide initiatives, navigating opportunities and challenges at the confluence of scientific frontiers, technology, and society, including strategic

efforts in AI, medicine, and the biosciences. He has pursued in his research principles and applications of AI amidst the complexities of the open world, with efforts on harnessing probability and utility in machine learning and reasoning, models of bounded rationality, and principles and mechanisms for supporting human-AI interaction and complementarity. His efforts and collaborations have led to fielded systems in healthcare, transportation, ecommerce, operating systems, and aerospace. He received the Feigenbaum Prize and Allen Newell Prize for contributions in AI. He received the CHI Academy honor for innovations at the intersection of AI and human-computer interaction. He has been elected to the National Academy of Engineering (NAE) and is a fellow of the Association of Computing Machinery (ACM) and Association for the Advancement of AI (AAAI). He serves on the [President's Council of Advisors on Science and Technology](#) (PCAST). He founded and chairs Microsoft's [Aether committee](#), established the [One Hundred Year Study on AI](#), and co-founded and serves as board chair of the [Partnership on AI](#).