

# The Unreasonable Effectiveness, and Difficulty, of Data in Healthcare

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## ABSTRACT

Data and data analysis are widely assumed to be the key part of the solution to healthcare systems' problems. Indeed, there are countless ways in which data can be converted into better medical diagnostic tools, more effective therapeutics, and improved productivity for clinicians. But while there is clearly great potential, some big challenges remain to make this all a reality, including making access to health data easier, addressing privacy and ethics concerns, and ensuring the clinical safety of "learning" systems. This talk illustrates what is possible in healthcare technology, and details key challenges that currently prevent this from becoming a reality.

**Author Keywords:** Healthcare; AI; machine learning; NLP; ethics; interoperability

## BIOGRAPHY

Dr. Peter Lee is Corporate Vice President, Microsoft Healthcare. He leads an organization that works on technologies for better and more efficient healthcare, with a special focus on artificial intelligence and cloud computing. Dr. Lee has extensive experience in managing the process of going from basic research to commercial impact. Past illustrative examples include the deep neural networks for simultaneous language translation in Skype, next-generation IoT technologies, and innovative silicon and post-silicon computer architectures for Microsoft's cloud. He also has a history of advancing more "out of the box" technical efforts, such as experimental under-sea datacenters, augmented-reality experiences for HoloLens and VR devices, digital storage in DNA, and social chatbots such as XiaoIce and Tay. Previously, as an

Office Director at DARPA, he led efforts that created operational capabilities in advanced machine learning, crowdsourcing, and big-data analytics, such as the DARPA Network Challenge and Nexus 7. He was formerly the Head of Carnegie Mellon University's computer science department.



As a thought leader, he has spoken and written widely on technology trends and policies, spanning the fields of computing technology, healthcare, and innovation ecosystem. He is a member of the Boards of Directors of the Allen Institute for Artificial Intelligence and the Kaiser Permanente School of Medicine. He served on President's Commission on Enhancing National Cybersecurity. He has led studies for the National Academies on the impact of federal research investments on economic growth and testified before the US House Science and Technology Committee and the US Senate Commerce Committee.

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