

Title: AI as normal healthcare technology

Speaker: Niels Peek, Professor of Data Science and Healthcare Improvement, University of Cambridge

Abstract:

In this keynote, I challenge the prevailing narratives of AI exceptionalism and offer a grounded, historically informed alternative. Situating healthcare AI within Narayanan and Kapoor's invention–innovation–diffusion framing, I argue that AI is not fundamentally different from other transformative, general-purpose technologies that preceded it – such as electricity and the internet. As a consequence, the decisive questions arise not from the technology itself, but from its diffusion: its impact is realised only through human, organisational, and institutional change.

Drawing on the extensive history of AI in medicine, I show why benchmark performance rarely translates into real-world clinical value, why diffusion is inherently slow in safety-critical domains such as healthcare, and why the lessons of past failures (alert fatigue, calibration drift, and evaluation shortcuts) remain relevant today. Confronting the widening gap between the pace of AI development and the timescales of rigorous evaluation, I turn to the question that should guide the field: what would good healthcare AI actually look like?

My answer places patients and healthcare professionals at the centre of innovation, and makes the case for productive cycles of innovation and diffusion that protect quality, safety, and the workforce. Throughout, I draw on examples from my own research on AI-based risk prediction models and ambient voice technology, using them to illustrate both the recurring barriers to translation and the conditions under which AI can genuinely improve care.

A short presentation of research:

Niels Peek is Professor of Data Science and Healthcare Improvement at The Healthcare Improvement Studies Institute (THIS Institute), University of Cambridge, where he leads a programme of research to develop and evaluate digital innovations to support improvement in healthcare. Niels has a global reputation for his work on data-driven informatics for healthcare improvement, health data science, clinical prediction models, and computerised decision support tools. With a background in computer science and artificial intelligence, Niels was President of the Society for Artificial Intelligence in Medicine until 2017. He also led the Greater Manchester Connected Health City, part of a £20 million government investment to establish a learning health system in the north of England. A widely published researcher, Niels has co-authored more than 300 peer-reviewed scientific articles. He is an associate editor of *BMJ Health and Care Informatics*, and a member of the editorial boards of *npj Digital Medicine* and *Artificial Intelligence in Medicine*. He is a fellow of the American College of Medical Informatics and the International Academy of Health Sciences Informatics.