UNIVERSITÀ DI PAVIA
Department of Electrical, Computer and Biomedical Engineering

CHT
Centre for Health Technologies
University of Pavia

30 Novembre 2026 - Ore 14.30
Campus della Salute - Aula Ferrata

Seminar:



Biomedical AI: Its Roots, Evolution, and Emerging Future

Edward H. Shortliffe, MD, PhD
Chair Emeritus & Adjunct Professor
of Biomedical Informatics,
Columbia University in the City of New York, USA

Seminar:

Human Intelligence and the Evolution of Medical AI



Vimla L. Patel, DSc, PhD
Adjunct Professor
of Biomedical Informatics,
Columbia University in the City of New York, USA

Credits awarded for PhD students in the PhD Program in Bioengineering, Bioinformatics and Health Technologies

Organizer:

Prof. Riccardo Bellazzi
President of CHT

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Shortliffe Presentation – University of Pavia
December 2026

Presentation Title:

Biomedical AI: Its Roots, Evolution, and Emerging Future

Speaker Name and Title:

Edward H. Shortliffe, MD, PhD
Chair Emeritus & Adjunct Professor of Biomedical Informatics, Columbia University in the City of New York, USA

Speaker Bio:

Ted Shortliffe is Chair Emeritus and Adjunct Professor of Biomedical Informatics at Columbia University's Vagelos College of Physicians and Surgeons. He also holds an adjunct appointment at Weill Cornell Medical College. Editor Emeritus of the *Journal of Biomedical Informatics* (Elsevier), he is also editor of the Springer textbook *Biomedical Informatics: Computer Applications in Health Care and Biomedicine*, (5th edition, 2021). In the past Dr. Shortliffe served as President/CEO of the American Medical Informatics Association and was founding Dean of the University of Arizona College of Medicine in Phoenix. He has spearheaded the formation and evolution of graduate degree programs in biomedical informatics at Stanford, Columbia, and Arizona State Universities. Both a PhD computer scientist and a physician who has practiced internal medicine, Dr. Shortliffe is an elected member of the National Academy of Medicine, a fellow of the American College of Medical Informatics (ACMI) and of the Association for the Advancement of Artificial Intelligence (AAAS), and a Master of the American College of Physicians (MACP). He received the Association of Computing Machinery's Grace Murray Hopper Award in 1976 and ACMI's Morris F. Collen Award in 2006.

Presentation Abstract:

Five decades have passed in the field of Artificial Intelligence in Medicine (AIM), a pursuit that has evolved substantially while tracking the corresponding changes in computer science, hardware technology, communications, and biomedicine. Its roots go back more than 60 years, emerging from medical schools and computer science departments. The AIM field is now more visible and influential than ever before, paralleling the enthusiasm and accomplishments of AI more generally. This talk will briefly summarize some of AIM history, providing an update on the status of the field in the early years of its second half-century. The inherent complexity of medicine, and of clinical care, necessitates that we address not only decision-making performance but also issues of a system's usability, workflow, transparency, safety, and ultimately rigorous and persuasive results from formal clinical trials. These requirements contribute to an ongoing investigative agenda for AIM research and development. With the emergence of LLMs (Large Language Models), new challenging questions have emerged. There is consensus that we must define the appropriate and ethical use of AI tools in clinical settings, emphasizing the role that physicians and other health professionals must play to assure that the new tools are safe and effective, following ethical standards and engaging both patients and medical professionals in ways that are acceptable to both.

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Patel Presentation – University of Pavia
December 2026

Presentation Title:

Human Intelligence and the Evolution of Medical AI

Speaker Name and Title:

Vimla L. Patel, DSc, PhD
Adjunct Professor of Biomedical Informatics,
Columbia University in the City of New York, USA

Speaker Bio:

Vimla Patel is a cognitive scientist and biomedical informatician whose pioneering research has advanced the understanding of clinical reasoning, medical expertise, healthcare decision-making, and human-AI interaction. Her work has played a foundational role in integrating cognitive science, biomedical informatics, artificial intelligence, and behavioral science to improve the design, implementation, and evaluation of health information technologies. She is an Adjunct Professor at Columbia University Irving Medical Center and Weill Cornell Medical College. Previously, she served as Professor of Medicine and Psychology at McGill University, where she directed both the McGill Cognitive Science Center and the Center for Medical Education, and later as Senior Research Scientist and Director of the Center for Cognitive Studies in Medicine and Public Health at the New York Academy of Medicine. She is an elected Fellow of the Royal Society of Canada, the American College of Medical Informatics (ACMI), the International Academy of Health Sciences Informatics, and the New York Academy of Medicine. Her honors include Sweden's Woman of Science Award, the AMIA William W. Stead Award for Thought Leadership, and designation as an ACMI Distinguished Fellow. She previously served as Associate Editor of the *Journal of Biomedical Informatics* and Assistant Editor of *AI in Medicine,* and she currently edits the Springer book series *Cognitive Informatics in Biomedicine and Healthcare.*

Presentation Abstract:

As artificial intelligence (AI) becomes increasingly integrated into clinical workflow, the role of human cognition in medicine faces a pivotal challenge. While AI offers powerful tools for pattern recognition, prediction, and data synthesis, it also risks displacing the interpretive and reflective processes that underpin clinical expertise. This presentation explores the enduring importance of human intelligence in medical decision-making, emphasizing cognitive integrity as a systemic safeguard in the digital age. Drawing on my three decades of research in cognitive psychology, biomedical informatics, and clinical reasoning, and the role of knowledge representation, this talk examines how physicians think—how memory, contextual judgment, and tacit knowledge shape diagnostic and therapeutic decisions. In fast-paced, algorithmically mediated environments, these cognitive processes are increasingly vulnerable to erosion. By revisiting the cognitive foundations of clinical practice, this talk considers how to preserve, support, and augment human intelligence in the evolving landscape of digital medicine. Reclaiming cognitive integrity is not a retreat from innovation—it is a strategic imperative for building trustworthy, human-centered healthcare systems.