BioSymposium

Crossing the Rubicon in AI Decision-Making: A Clinical Dilemma

Monday 18 March 2024

Plenary Speaker

Professor Anton van den Hengel

Director, Centre for Augmented Reasoning, Australian Institute for Machine Learning

Anton van den Hengel is the Director of the Centre for Augmented Reasoning at the Australian Institute for Machine Learning (AIML), a Professor of Computer Science at the University of Adelaide, a Chief Investigator of the NHMRC Centre of Research Excellence on Healthy Housing, a Fellow of the Australian Academy of Technology and Engineering and a Fellow of the Royal Society of South Australia and former Director of Applied Science at Amazon.

The Centre for Augmented Reasoning (CAR), established in 2021, represents a $20m investment by the Australian Government in AI research. Prof van den Hengel was also the founder of AIML, Australia's largest machine learning research group. Professor van den Hengel has been a CI on over $80m in research funding from sources, including Google, Facebook, Canon, BHP Billiton, and the ARC.

Prof van den Hengel has won several awards, including the 2021 Australasian AI Outstanding Service Award, the Pearcey Foundation Entrepreneur Award, the SA Science Excellence Award for Research Collaboration, and the CVPR Best Paper prize in 2010. According to Google Scholar, he has authored over 400 publications, has an h-index of 80. He has had 8 patents commercialised, formed 5 start-ups, and had a medical technology achieve first-in-class FDA approval. Current research interests include deep learning, vision and language problems, image-based modelling, and weekly supervised learning.

Session Speakers

Associate Professor Hamed Akhlaghi

Head of Emergency Medicine Research and Emergency Consultant, St Vincent's Hospital Melbourne

Associate Professor Hamed Akhlaghi is a dynamic and accomplished professional with a diverse background in medicine, research, and leadership. Holding a Medical Doctorate from Tehran University and a Ph.D. in Neuroscience from the University of Melbourne, he brings a wealth of knowledge and expertise to the field.

A/Prof Akhlaghi's commitment to academic excellence is evident through his current involvement with the Australian College for Emergency Medicine as an examiner. His research interests are diverse from Artificial Intelligence implementation to Traumatic Brain Injury studies, showcasing a keen interest in advancing medical knowledge and improving patient outcomes.

As the Head of Emergency Medicine Research at St Vincent's Hospital, A/Prof Akhlaghi spearheads groundbreaking initiatives, expanding the research portfolio and fostering collaborations with esteemed institutions. His other role is a Research Scholar Lead at St Vincent's Clinical School to oversee research project for medical students at The University of Melbourne.

Beyond his clinical and research activities, A/Prof Akhlaghi is actively engaged in education, mentoring Emergency Medicine trainees, and contributing to medical education programs. His dedication extends globally, with roles in international committees as a member of Emergency medicine training special interest group at International Federation of Emergency Medicine.

Driven by a passion for innovation and a commitment to advancing healthcare, A/Prof Akhlaghi continues to make significant contributions to emergency medicine, research, and medical education.

Associate Professor Kate Burbury

Executive Director, Digital Healthcare Innovation, Peter MacCallum Cancer Centre

Associate Professor Kate Burbury is a consultant haematologist, clinician-researcher and Executive Director of Digital and Healthcare Innovations at Peter Mac. Prior to moving to executive role, she was lead clinician for MPN/CML, as well as the haemostasis/thrombosis and peri-procedural optimisation, including prehabilitation.

Associate Professor Burbury is a leading digital health expert which has translated to strategy development, collaborative capacity building, workforce development and a data/digital vehicle pipeline. Her clinical and research program generates multidisciplinary and multimodality collaborations to ensure strategy and focus are directed to key priority health areas, “gaps” in cancer care delivery and translation of scientific discovery and developments into the clinic. She is involved in the development of expert guidelines and governance structures both for the institution as well national and international expert groups; and has published numerous peer-reviewed manuscripts, as well as being a member of the editorial board and an invited reviewer for numerous journals. She has an extensive list of presented abstracts, as well as an invited expert speaker at national and international scientific meetings.

Professional links: LinkedIn ORCID.

Professor Wendy Chapman

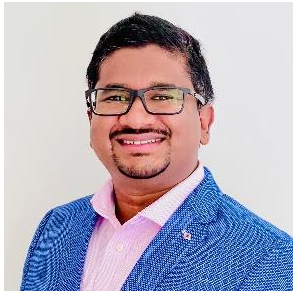
Director, Centre for Digital Transformation of Health, The University of Melbourne

Wendy Chapman is the Associate Dean of Digital Health and Informatics at the University of Melbourne, as well as the Director of the Centre for Digital Transformation of Health. She is an elected fellow of the American College of Medical Informatics and the US National Academy of Medicine and serves as a Board member of the Australasian Institute of Digital Health.

Prof. Chapman’s research aims to leverage data and digital technology to transform healthcare delivery. She spent two decades developing and evaluating AI / natural language processing algorithms and has led many multidisciplinary programs of work focused on research, education, and application of digital health. Her current passion is how to best design, implement, and validate digital innovations like AI and virtual care in healthcare settings.

Dr Gihan de Mel

General Practitioner, Next Practice



Dr Gihan de Mel is a highly dedicated General Practitioner based in Melbourne, renowned for his unwavering commitment to advancing healthcare through innovative solutions.

As a specialist GP, he brings a hands-on approach to his daily interactions with patients, providing invaluable insights into the intersection of healthcare and technology. Practicing at Next Practice in Prahran and Casey Medical Centre, Clyde - Dr de Mel's passion extends beyond clinical care. Serving as a Clinical Fellow at Outcome Health and a Member of the Board of Advisors at Goto.Health, he plays a crucial role in exploring the dynamic intersection of health and technology, actively shaping the future of healthcare.

Recognising the imperative need for collaboration between clinicians and technology experts, Dr de Mel founded Tech4Docs - an online community that serves as a bridge, uniting clinicians and non-clinician digital health leaders, innovators, and technologists across Australia and New Zealand. He adeptly facilitates cross-disciplinary conversations, fostering relationships that drive the co-creation of solutions to healthcare challenges.

Dr de Mel is also a valued member of the Monash Health GP Advisory Committee. His hands-on contributions enhance collaboration between primary and tertiary care, further enriching efforts at the crossroads of health and technology, where every interaction at the coalface informs a vision for innovative and patient-centred solutions.

Sinéad Fitzgerald

Senior Partner Development Manager, Microsoft

Sinéad Fitzgerald is a Senior Partner Manager at Microsoft, where she leads Healthcare ISV partnerships in ANZ.

With a strong background in strategic partnerships and technology, she connects Microsoft with the innovative healthtech community in Australia and New Zealand.

Sinéad is an accomplished presenter and inspiring social leader, deeply fascinated by how technology and human connection can enrich lives.

Beata Khaidurova

Partner, FB Rice

Beata Khaidurova is a partner in the Melbourne engineering team.

Beata specialises in matters relating to patents and designs in the electrical, electronics and software space, and has familiarity with fintech, gaming, and medical device technologies. Beata began her career with FB Rice in 2012, qualifying as a patent attorney in 2015.

Beata holds a Bachelor of Laws (Honours) and a Bachelor of Electrical and Computer Systems Engineering (Honours) both from Monash University, and completed a Masters of Intellectual Property Law at the University of Melbourne in 2014.

Beata has been recognised as an MIP Rising Star every year since 2020.

Dr Emily Kirkpatrick

Executive Medical Director, Calvary Amplar Health Joint Venture

Dr Emily Kirkpatrick is the Executive Medical Director of the Calvary-Amplar Health Joint Venture (CAHJV), which has provided care through a nation-leading NSQHS-accredited virtual hospital to more than 200,000 patients across Australia.

The CAHJV Virtual Hospital has delivered care across five jurisdictions, leveraging AI capabilities to support clinical decision making and identifying patients in bricks and mortar facilities suitable for virtual home-based acute care.

Professor Robyn Langham

Chief Medical Adviser, Therapeutic Goods Administration

Director, Australian Medical Council

Chair, Human Research and Ethics Committee, The Royal Children's Hospital Melbourne

Professor Langham is the Chief Medical Adviser of the Therapeutic Goods Administration. Before joining the TGA in mid-2022, she worked as a nephrologist and clinician researcher, in drug development of novel anti-inflammatory and anti-fibrotic agents.

She was Director of the Renal Unit at St. Vincent's in Melbourne, and later Head of the School of Rural Health at Monash University. Professor Langham is also a director of the Australian Medical Council and chairs the Human Research and Ethics Committee at the Royal Children's Hospital in Melbourne.

Dr Melissa McCradden

AI Director, Women's and Children's Health Network

The Hospital Research Foundation Group Clinical Research Fellow, Australian Institute for Machine Learning

Dr Melissa McCradden is the Women's and Children's Health Network Artificial Intelligence Director and The Hospital Research Foundation Clinical Research Fellow in Ethics of AI at the Australian Institute for Machine Learning at the University of Adelaide.

She is an Adjunct Scientist with The Hospital for Sick Children in the Genetics and Genome Biology Research Program.

Dr McCradden has published on algorithmic bias, responsible clinical evaluation of healthcare machine learning, and clinical integration of AI. Representing ethical development and evaluation of AI, she participates in a plethora of international reporting guideline initiatives including CONSORT and SPIRIT AI (clinical trials), DECIDE-AI (first-in-human trials) among others.

Dr McCradden holds a PhD in Neuroscience from McMaster University, a Master of Health Sciences in Bioethics from the University of Toronto, and was the inaugural Postdoctoral Fellow in AI Ethics at SickKids and Vector Institute.

Associate Professor Tam Nguyen

Deputy Director of Research, St Vincent's Hospital Melbourne

Associate Professor Tam Nguyen has over 20 years of working in the healthcare, health and medical research and research management sector including tertiary teaching hospitals, medical research institutes and universities across Australia.

As the deputy director of research at St Vincent's Hospital Melbourne, Tam is responsible for research strategy, research development and innovation. He leads a dynamic team dedicated to providing strategic and innovative solutions to facilitate health and medical research. Tam serves as non-executive director on various NFP, healthcare and aged care boards, providing his broad range expertise including strategy, governance and sector specific in health and medical research.

He also advises numerous medtech and health tech start-ups on their overall strategies, clinical trials strategies, project management and execution.

Tam is a regular invited speaker on a broad range of topics, including research strategy and industry collaboration; research ethics and governance; digital health, AI and machine learning in healthcare and the clinical trials sector in general. He chairs and moderates and sits on program committee at numerous national and international conferences.

Tam is currently the instructor for the Research Development and Translation subject as part of the Master of Clinical Research degree (https://study.unimelb.edu.au/find/courses/graduate/master-of-clinical-research/).

Tam is the co-editor of the recently published book: Artificial Intelligence in Medicine: Applications, Limitations and Future Directions (Springers)(https://link.springer.com/book/10.1007/978-981-19-1223-8).

Tam Nguyen's links:

- St Vincent's Hospital Melbourne (Research Directorate)
- AI in Medicine

Luke Restorick

Global Healthcare Executive, Corporate Advisor and Advocate for Breakthrough Innovation

Luke Restorick is a global executive, with 25+ years of experience, spanning strategic management & technology consulting, early-stage venture capital and for the last 13 years leading corporate strategy & innovation for IVD diagnostic companies Leica Biosystems and Cepheid (part of Danaher Corporation NYSE:DHR).

At Leica biosystems, Luke was heavily focussed on the development of the company's Data & Digital Strategy to help diagnose cancer, via analysis of digital tissue images. A key component of the strategy related to commercializing AI/ML algorithms to aid in the diagnosis of cancer. Easy to write on paper, extremely complicated to execute with considerations related to building capabilities and ecosystems (internally & via partners), navigating regulations and reimbursement, changing the standard of care, and pathologist acceptance; While in parallel building and maintaining corporate conviction and funding.

Luke has a Masters of Engineering from UC Berkeley and a Management of Technology from the Haas Business School. In June 2021 Luke completed: Competing in the Age of AI, a Harvard Business Executive Education course.

Professor Brett Sutton OA

Director, Health and Biosecurity, CSIRO

Professor Brett Sutton is Director of Health & Biosecurity at CSIRO, Australia's national science agency.

He is a qualified public health physician, with extensive experience and clinical expertise in public health and communicable diseases, gained through experience in Government, emergency medicine and field-based international work.

Prior to CSIRO, he held the role of Victoria's Chief Health Officer, together with the role of Victoria's Chief Human Biosecurity Officer. In this role, Professor Sutton played a leading role in guiding the public health response to COVID-19 in Victoria, including as statutory decision-maker and departmental spokesperson.

Prior to his appointment as Victorian Chief Health Officer, Professor Sutton held several senior positions within the Victorian Department of Health, including as Deputy Chief Health Officer (Communicable Disease) and within their Health Protection Branch.

Professor Sutton has specialist knowledge in tropical medicine and infectious disease, including in lower-middle income countries and complex humanitarian environments, and has worked in various specialised health roles in Afghanistan, Ethiopia, Kenya, Timor-Leste, and Fiji.

Professor Sutton is a Fellow of the Royal Society for Public Health, a Fellow of the Australasian College of Tropical Medicine, and a Fellow of the Australasian Faculty of Public Health Medicine (AFPHM). He is also a member of the Faculty of Travel Medicine.

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Associate Professor Johan Verjans

Deputy Director, Australian Institute for Machine Learning

Associate Professor Johan Verjans is a clinician-scientist at the Royal Adelaide Hospital with a research focus on cross-disciplinary translational research and a track record in leadership.

In his role as a deputy director at the Australian Institute for Machine Learning (AIML), a world-renowned institute in machine learning, and as platform leader AI at SAHMRI, he combines experience in molecular medicine and clinical research with vast experience working with engineers on advanced imaging techniques, and computer scientists to apply machine learning to medical problems to translate research into the clinic.

He graduated in medicine from Maastricht University via an MD-PhD track after being awarded the DiPalma Fellowship to work with the renowned Professor Narula in Philadelphia and UC Irvine. During cardiology training, he was awarded a prestigious Rubicon Fellowship by the Dutch Science Foundation to complete a post-doctoral fellowship at Massachusetts General Hospital/Harvard Medical School, followed by a clinician-scientist award at the University Medical Centre Utrecht during his cardiology training. He was recruited by the University of Adelaide in 2017 and was a 2022 recipient of the University's Future Industry Making Fellowship.

Since then, he has formed the Medical Machine Learning group at AIML and used his combined clinical, biomedical and technical expertise to lead a rapidly growing group of clinicians, biomedical researchers and computer scientists with the objective of making the University of Adelaide a global leader in AI in Healthcare, using existing globally renowned AI expertise at AIML. The group has grown to over 25 members, won international technology challenges and has contracts with pharma and technology companies such as GSK, Roche, Siemens Healthineers and Medtronic. The group's efforts have caught international attention, leading to an invitation from a renowned consortium of Medical AI Institutes. A testament to their diligence, their institute was distinguished as the AI Centre in Medicine of the Year in 2022 by the AI Global Summit. His interest in AI/ML, accumulated over the past 9 years, reflects an aim to weave machine learning techniques into clinical realms, and he's collaborating with governmental entities to achieve this. He advises companies and is also a member of the global GSK AI advisory board.

His research has been published in leading cardiology journals Circulation, JACC, JAMA Cardiology, Nature Reviews Cardiology, JACC CV Imaging, Light: Science and Applications, IEEE Transaction in Medical Imaging. The most significant achievement in computer science is that his team won the global Medical VQA challenge organised by the NIH. VQA was at that time one of the most challenging areas in machine learning, whereby the computer is programmed to answer open-ended questions from medical images, which was the early version of medical chatGPT.

He has given presentations at all major cardiovascular conferences, including several Young Investigator award sessions. He was chair of the Australian Society for Molecular Imaging Conference, and a member of the Publications Committee of the Society for Cardiac MR evaluating clinical imaging guidelines and consensus statements. He was the lead author of a chapter in the first book of AI in Medicine (Springer/Nature) and contributed to several other chapters, including an international expert group to standardise machine learning methods in Medical Imaging. He is an editorial board member of the European Heart Journal Digital Health and Frontiers in Cardiology and is Associate Editor of the Netherlands Heart Journal and a member of the publication committee in a leading imaging society, the Society of Cardiac MRI.

Mentorship-wise, he provides invaluable guidance to budding researchers and students, creating a nurturing academic environment with a fantastic mix of engineers, clinicians and computer scientists.

Session Chairs

Sinéad Fitzgerald

Senior Partner Development Manager, Microsoft

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Associate Professor Helen Frazer

Clinical Director, St Vincent's BreastScreen and BreastScreen Victoria

Associate Professor Helen Frazer is Clinical Director of St Vincent's BreastScreen and BreastScreen Victoria.

Helen has over 25 years of clinical experience and brings a deep understanding of the benefits, harms and challenges in population screening programs. Research includes the use of deep learning AI for breast cancer detection with mammography; ethical, social and legal implications of AI in healthcare; user experience and workflow studies in cancer screening; and health workforce preparation for AI tools and decisioning.

Helen leads the BRAIx AI research program that has been awarded MRFF grants to translate promising AI mammography image reading results into breast cancer screening. In 2022 Helen was awarded the ANZ Women in AI "Innovator of the Year" and winner of the Health category.

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- AI in Medicine

Ken Seidenman

Senior Associate | Patent Attorney (Biotechnology), FB Rice

Ken Seidenman is a senior associate in our Melbourne biotechnology team with notable interest in the application of AI to antibody and protein design, and how this intersects with effective patenting strategies. His expertise encompasses molecular biology, neuroscience, stem cells, antibodies, drug discovery platforms, small molecule cancer treatments, and neurodegenerative disease therapeutics.

Ken will leverage his background to delve into intellectual property considerations within the growing integration of AI and biotech. He will offer insights to help innovators and collaborators navigate the evolving AI-biotech landscape with clarity and pragmatic strategies. Ken has played a significant role in pursuing patent protection of several prominent biotechnology and therapeutic developments including human induced pluripotent stem cells, CRISPR gene editing, and the blood cancer blockbuster drug, Imbruvica (Ibrutinib).

With a practical approach, Ken guides biotechnology patent portfolios from inception to expansion, supporting clients in drafting, prosecuting patents, and devising strategies for commercial success.

Ken's thought leadership extends beyond his IP practice. He recently published an article on the potential impact of AI on the enablement of biopharmaceuticals, particularly antibodies, and actively contributed to industry discussions around what AI and machine learning mean for our innovators' intellectual property. His multifaceted involvement underscores his commitment to guiding innovators through the intersections of biotechnology, AI and intellectual property.