Language Understanding λ(μ) Laboratory

Can Open-Source Software Revolutionise Healthcare? Exploring Challenges and Opportunities with Synthetic Fetal Ultrasound Imaging, Real-Time AI for Endoscopy, and Eye Diagnostics

Miguel Xochicale

Biography

Miguel is currently a Senior Research Engineer at University College London, UK, where he leads pioneering advancements in data-centric AI tools for Medical Imaging, MedTech, SurgTech, Biomechanics, and Clinical Translation. His work focuses on driving innovation and delivering impact in several critical areas: Real-time AI for surgery, eye movement disorders, and echocardiography, Sensor fusion data integrating wearable trackers with medical imaging, Generative models for fetal imaging, and Child-robot interaction in low-resource countries. By harnessing these cutting-edge technologies, he is dedicated to transforming healthcare through AI and making a lasting impact on patient care and medical research.

Abstract

Open-source software has been a powerful catalyst for innovation in computer engineering, driving significant advancements in healthcare, particularly in medical and surgical technologies. Recently, the open-source movement has expanded beyond software to include the release of code, data, and models, further accelerating progress across various fields. However, in healthcare, open-sourcing presents unique challenges, such as safeguarding patient data, managing the costs of specialised hardware and software maintenance, and addressing the limited availability of expert clinicians required to annotate, test, and validate AI innovations. In this talk, Miguel will explore how open-source technologies are advancing healthcare, with a focus on medical and surgical innovations. He will showcase key advancements while addressing the complexities of clinical translation, illustrated through three of his projects: Fetal Ultrasound Image Synthesis, endoscopy-based video analysis for surgery, and real-time AI diagnosis of eye movement disorders. Finally, the talk will examine the challenges of clinical translation and showcase examples of innovative technologies that leverage open-source software, models, and data to address some of the most complex problems in healthcare.

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8:00 - 9:00 a.m. (UK Time)

14:00 -15:00 p.m. (Thailand Time)

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Chairperson:

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