



香港中文大學
The Chinese University of Hong Kong



Institute of Medical Intelligence and XR
智能醫療及擴展現實研究所

2026 IMIXR Workshop

Welcome

2026
25/06

09:15AM - 20:00PM

CUHK · Esther Lee Building LT1



2026 Research Grands Council Theme-Based Research Scheme IMIXR Workshop

CUHK · Esther Lee Building LT1

2026.6.25 09:15am-20:00pm

Agenda

AM 6月25日 08:45-14:30

- 08:45-09:15 ○ Registration and Welcome Reception
- 09:15-09:20 ○ Opening Remarks and Introduction
- 09:25-09:45 ○ Intelligent Personalized Diagnosis Program
- 09:45-10:05 AI-XR Interaction and Virtual Surgery Program
- 10:05-10:25 Intraoperative AI - AR Assisted Surgery Program
- 10:25-10:55 ○ Invited talk I - Prof. Hongen Liao
- 10:55-11:30 ○ Coffee Break
- 11:30-12:00 ○ Invited talk II - Prof. Jinman Kim
- 12:00-12:30 Invited talk III - Prof. Hao Chen
- 12:40-14:30 ○ Lunch Break - The Stage, 3/F CYT

PM 6月25日 14:40-20:00

- 14:40-15:10 ○ Invited talk IV - Prof. Xiaojun Chen
- 15:10-15:40 Invited talk V - Prof. Cheng Chen
- 15:40-16:10 Invited talk VI - Prof. Shujun Wang
- 16:10-16:40 Invited talk VII - Prof. Xiaomeng Li
- 16:40-16:45 ○ Closing Remarks
- 16:50-17:50 ○ Student Session : Posters
- 18:00-20:00 ○ Gala Dinner - Chung Chi College Staff Club



2026 Research Grands Council Theme-Based Research Scheme

IMIXR Workshop

Morning Session



Prof. Hongen Liao

**AI- and XR-Enabled Intelligent
Navigation for Precision Minimally
Invasive Surgery**

Minimally invasive surgery increasingly relies on intelligent navigation to overcome limited visibility, constrained access, and complex anatomical variability. This talk presents our recent advances in AI- and XR-enabled surgical guidance, including autostereoscopic augmented-reality navigation, multimodal medical image registration and reconstruction, computational optical enhancement for endoscopy, and robot-assisted autonomous decision-making. We will discuss representative applications in orthopedics, neurosurgery, cardiovascular intervention, and biliary and bronchoscopic procedures. By integrating medical imaging, spatial localization, intelligent planning, and robotic control, these technologies aim to provide surgeons with intuitive three-dimensional perception, precise intraoperative guidance, and safer, more efficient digital minimally invasive treatment.

**Virtual-Physical Alignment for
Rib Fracture Localization in
Surgical Mixed Reality**

Surgical stabilization of rib fractures (SSRF) requires accurate localization of fractured ribs, which can be challenging using standard CT and ultrasound methods due to complex anatomy and variable fracture patterns. In this talk, I will present RibMR, a mixed reality (MR) system that uses a head-mounted display to project patient-specific 3D holograms onto the body during surgery. By integrating advanced imaging, human body modelling, and MR technologies, RibMR enables intuitive, real-time visualization of rib structures and fracture sites with precise virtual-physical alignment, improving rib fracture localization. I will present preliminary clinical results and discuss future applications of MR in complex surgical procedures.

Prof. Jinman Kim



Prof. Hao Chen

**Pathology Foundation Models
Transforming Precision Oncology
and Patient Care**

With the deep integration of AI and digital pathology, large pathology models are becoming a new paradigm in the field of precise cancer diagnosis and treatment. This talk will systematically explore the cutting-edge advancements of large pathological models in precise cancer diagnosis, molecular subtyping prediction, treatment response assessment, and prognostic analysis, revealing their breakthrough potential in achieving "micro-meso-macro" analysis through multimodal data fusion (such as whole-slide images, imaging, genomics, and clinical information). We will further explore how large pathology models are driving the paradigm shift in precision cancer diagnosis and treatment from "experience-driven" to "computation-driven".





2026 Research Grands Council Theme-Based Research Scheme IMIXR Workshop

Afternoon Session



Prof. Xiaojun Chen

AI-based medical image computing,
AR-based surgical navigation and
robotics with its clinical application

In this talk, Prof. Xiaojun Chen will introduce his team's research outcome, including AI-based medical image analysis, automatic pre-operative planning and design of medical implants and surgical guides, real-time soft tissue deformation computing, foundation model for surgical recognition and navigation, etc. The self-developed integrated AR-based surgical navigation and robotic system has effectively improved the precision and safety of the operation, and has been clinically applied in various surgeries such as oral and cranio-maxillofacial surgery, ophthalmology, head and neck surgery, orthopedics, pulmonology, etc.

**Towards Medical Vision-Language
Intelligence: Learning, Reasoning,
and Generation**

Medical vision-language models are moving medical AI beyond task-specific image analysis toward multimodal systems. In this talk, I will present our recent efforts towards medical vision-language intelligence, covering representation learning, explainable medical reasoning, and unified multimodal understanding and generation. Together, these studies outline a pathway toward generalist medical AI systems that can learn from heterogeneous medical data, reason with visual and clinical evidence, and generate clinically meaningful outputs.

Prof. Cheng Chen





2026 Research Grands Council Theme-Based Research Scheme IMIXR Workshop

Afternoon Session



Prof. Shujun Wang

**Smart Digital Health: From Clinical
Diagnosis to Digital Twins**

Smart digital health is transforming biomedical research from single-task diagnosis toward cross-scale, multimodal, interpretable systems. Under "Smart Digital Health: From Clinical Diagnosis to Digital Twins", this AI-driven framework spans molecules, cells, tissues, organs, and the human body. It covers medical image analysis, chest X-ray report generation, time-series modeling, multimodal Alzheimer's diagnosis, missing-data modeling, and brain foundation models. Building on these, it explores brain digital twins using baseline neuroimaging to simulate disease progression, supporting risk stratification, prognosis, communication, and trial design. Extending to discovery, it includes peptide sequencing, virtual cell modeling, and single-cell prediction for personalized medicine.

**Medical Foundation Models in the
Diagnosis of Cancer and
Cardiovascular Diseases**

This seminar will introduce our team's latest research advances in large-scale medical foundation models. First, I will introduce our recent work, PRET, published in Nature Cancer. The main contribution of this study is the proposal of a pan-cancer recognition framework, PRET (Pan-cancer Recognition without Example Training), which requires no additional parameter training and provides a new pathway toward scalable AI-powered pathological diagnosis. The method is based on an in-context learning mechanism and can adapt to new tasks during inference using only a small number of labeled examples, without retraining or fine-tuning. This significantly reduces the reliance on large-scale datasets and computational resources. In addition, I will introduce our recent research progress and future perspectives in cardiac ultrasound image analysis.

Prof. Xiaomeng Li





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Notes



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Thank you



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