



香港科技大學
THE HONG KONG
UNIVERSITY OF SCIENCE
AND TECHNOLOGY

Distinguished Speaker Seminar

Time: 4:00-5:00 PM, Nov 8th, 2022

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Professor Alejandro F Frangi

IEEE Fellow, SPIE Fellow, MICCAI Fellow, AAIA Fellow

Diamond Jubilee Chair in Computational Medicine at the University of Leeds and KU Leuven
RAEng Chair in Emerging Technologies, University of Leeds

Biography

Professor Frangi directs the CISTIB Center for Computational Imaging and Simulation Technologies in Biomedicine. He is a Turing Fellow of the Alan Turing Institute. He is the Scientific Director of the Leeds Centre for HealthTech Innovation and Director of Research and Innovation of the Leeds Institute for Data Analytics. He holds an Honorary Chair at KU Leuven in the Departments of Electrical Engineering (ESAT) and Cardiovascular Science. His main research interests lie at the crossroads of medical image analysis and modelling with an emphasis on machine learning (phenomenological models) and computational physiology (mechanistic models). He is particularly interested in statistical methods applied to population imaging and in silico clinical trials. His highly interdisciplinary work has been translated into cardiovascular, musculoskeletal and neurosciences.

Computational Precision Imaging and Medicine in Regulatory Science

In this talk, I will overview our progress in the INSILEX Programme. We envision a paradigm shift in medical device innovation where quantitative sciences are exploited to carefully engineer medical device designs, explicitly optimize clinical outcomes, and thoroughly test side effects before being marketed. INSILEX is underpinned by Computational Medicine, an emerging discipline devoted to developing quantitative approaches for understanding the mechanisms, diagnoses, and treatment of human disease through the systematic application of mathematics, engineering, and computational science. Dealing with the extraordinary multi-scale complexity and variability intrinsic to human biological systems and health data demands radically new approaches compared to methods for manufactured systems. Within this framework, INSILEX extensively uses medical image computing, a mature field challenged by the progress made across all medical imaging technologies and more recent breakthroughs in biological imaging. We advocate for “Precision Imaging”, not as a new discipline but a distinct emphasis in medical imaging, unifying the efforts behind mechanistic and phenomenological model-based imaging. This talk summarizes and formalizes our vision of Precision Imaging for Precision Medicine and highlights connections with past research and our current focus on large-scale computational phenomics and in silico clinical trials.

Moderator: Dr. Hao CHEN, Assistant Professor of CSE (jhc@cse.ust.hk)