IMBB SEMINAR

ΙΝΣΤΙΤΟΥΤΟ ΜΟΡΙΑΚΗΣ ΒΙΟΛΟΓΙΑΣ ΚΑΙ ΒΙΟΤΕΧΝΟΛΟΓΙΑΣ   INSTITUTE OF MOLECULAR BIOLOGY AND BIOTECHNOLOGY

Towards Intelligent Endoluminal Navigation & Intervention: Theoretical, Artificial, and Embodied Intelligence in Action

Typically, medical access to vital organs is achieved through direct open surgery, laparoscopy, needle-sized incisions, or navigating body lumens. While a close entry site is often preferred to reduce surgery time, remote entry sites can be used to limit haemorrhage and recurrent stroke risks. Body lumens, such as blood vessels and cerebrospinal fluid pathways, act as highways to the intervention site, minimizing risks like secondary stroke, excessive arterial bleeding, and damage to proximal nerves. Safe access and effective navigation within body lumens, provide comprehensive access to most organs.

This talk presents an overview of our theoretical, artificial and embodied intelligence frameworks for intelligent endoluminal navigation and intervention. Through the integration of soft robotics, embodied intelligence and artificial intelligence, we envision to enable minimally invasive interventions deep within the body via automated multi-modal tissue and endoluminal navigation.

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THURSDAY 18/9/2025

13:00
Costas Fotakis room

Prof. M. Hadi Sadati

Assistant Professor, Queen Mary University of London (QMUL), UK

Dr. M. Hadi Sadati is an Assistant Professor in Robotics and Mechatronics, and the Director of the ACEi Group (Artificial, Embodied, and Collective Intelligence) within the Centre for Advanced Robotics (ARQ) at the School of Engineering and Materials Science, Queen Mary University of London, UK. He earned his PhD in Soft Robotics from King's College London (KCL) in 2018, following an MSc in Mechanical Engineering from Sharif University of Technology (2012) and a BSc from Amirkabir University of Technology (2010), Iran. Dr. Sadati has held research fellowships in Continuum Medical Robotics at KCL (2019–2024) and in Morphological Computation at the University of Bristol (2017–2019). He has also been a visiting researcher at several leading labs, including LASA & CREAT (EPFL, 2019 & 2021), SRL (ETH Zurich, 2021), Prof. Walker's Lab (Clemson University, 2017), and Morph Lab (Imperial College London, 2016–2017). His research interests span soft medical robotics, embodied intelligence, system dynamics, bioinspiration, and smart structures.

HOST: Dimitris Tzeranis

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