



INFORMATICS COLLOQUIUM

Speaker:

Dr. Jiangtao Wang, Coventry University (UK)

Health AI with Constrained Data Collection: Technologies and Applications

Abstract:

Continuous sensing and monitoring of the health status or related factors of individuals and groups, and high-precision reasoning and prediction of future states have become important research issues in the field of digital intelligent health. To achieve this goal, the in-depth development of key technologies such as ubiquitous (pervasive) computing, IoT, cloud computing, and AI, has been more and more widely used in intelligent healthcare software and systems. However, current smart healthcare systems often assume that large amounts of labelled health data (such as electronic medical records/wearable or mobile sensing data, etc.) are available for AI model training and prediction. However, in many real-world smart healthcare applications, this assumption is often difficult to meet due to many constraints such as high data collection costs, limited cohort size, quality assurance, patient willingness to participate, and privacy protection regulations. Therefore, how to develop an intelligent health system that meets application requirements under the condition of limited scale and quality of data collection has become a core and fundamental problem. To address this challenge, this talk will focus on how to comprehensively use machine learning and intelligent data collection technologies including active learning, data augmentation, self-supervised learning, and multi-task transfer learning, with our recent novel population health monitoring research in collaboration with public health team from National Health Service (NHS).

Bio:

Jiangtao is currently a tenured Associate Professor with the Centre for Intelligent Healthcare, at Coventry University, and he has won the prestigious Engineering and Physical Sciences Research Council's (EPSRC) New Investigator Award in 2021 and was selected as a member of the UKRI Future Leader Fellowship development network in 2023. Before joining Coventry, he was a lecturer at Lancaster University and Peking University, respectively. His research interests include Crowd Sensing, AI, Digital Health, and Smart Cities. Jiangtao has developed a strong international reputation for his research on Crowd Sensing (Crowdsourcing) systems, specifically within the domains of cost and quality joint optimization. He is among the pioneering researchers who introduce novel mechanisms to optimize sensing quality and cost in task allocation – a fundamental research issue and a maker or breaker in crowd sensing. Jiangtao has achieved a number of top conference and journal publications (e.g., UbiComp, PerCom, CSCW, AAAI, IJCAI, KDD, ICDM, IEEE TMC, IEEE Computer, ACM Health, and so forth), and was the PI of several national projects (e.g., EPSRC in UK and NSFC in China).

Date and time:

Monday June 26th, 2023, 04.00 pm

Location:

Pérolles 21, room D130, Bd de Pérolles 90, Fribourg

Contact person:

Prof. Philippe Cudré-Mauroux

The colloquium is free and open to the public.