

Leslie Comrie Seminar Series 2023/24

Machine Learning for Computer Vision

Wednesday 6 December 2023, 15:00-16:00

Speaker: Dr Xiaohao Cai, University of Southampton

Abstract:

Computer vision seeks to automate tasks that our human visual system can do. It is an interdisciplinary field mainly focusing on gaining high-level understanding from digital images or videos. Machine/deep learning technologies have revolutionised many fields including computer vision. Their success generally relies on data quality and quantity. For the data scarcity scenarios like in medical imaging, their performance could drop significantly. Moreover, in many cases, they also lack generalisation (eg the cross-domain adaptation problem) and explanation (eg explainable AI). In this presentation, I will introduce some of our recent work in computer vision (eg segmentation and classification) targeting those challenges, such as subspace feature representations for few-shot learning, cross-domain adaptation, multilevel explainable AI, etc.

Biography:

Dr Xiaohao Cai is a Lecturer (Assistant Professor equivalent) in the School of Electronics and Computer Science at the University of Southampton. He received his PhD degree in mathematics from The Chinese University of Hong Kong in 2012. He afterwards was a Postdoctoral Researcher at the Department of Mathematics of the Technische Universität Kaiserslautern in Germany. After that he was a Research Fellow (Wellcome Trust and Isaac Newton Trust) affiliated with the Department of Plant Sciences and Department of Applied Mathematics and Theoretical Physics at the University of Cambridge. Thenceforth, before joining Southampton, he was a Research Fellow in the Mullard Space Science Laboratory (MSSL) at University College London (UCL). He is Fellow of Advance HE in the UK. He has served as a peer reviewer of over 60 international journals and has published over 50 peer reviewed papers in journals and conferences such as SIAM and IEEE transactions. He has broad multi-disciplinary research interests in applied mathematics, statistics, and computer science, with main focus and applications in image/signal/data processing, optimisation, machine learning and computer vision.