



LSGI & RILS RESEARCH SEMINAR

Unlocking Space and Time: From SpaceTime Analytics to Generative GeoAI for Urban Transformation

 **13 SEPT 2024 (FRI)**

 **2:00 - 3:00 PM**

 **Z509, POLYU**

 **ENGLISH**

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ABSTRACT

This talk will delve into the evolving journey and vision of using space-time data to deliver societal benefits, transitioning from integrated spatiotemporal modelling to network and graph-based deep learning, and ultimately to generative GeoAI for urban studies. It will highlight the benefits of adopting an integrated space-time and network-based structure as a versatile spatial framework for representing complex processes traditionally illustrated by points, polylines, and polygons. We propose the utilisation of multi-layered networks and graph databases as the foundation for urban digital twins and Urban (Geo) Foundational Models. The presentation will feature applications of network and graph-based SpaceTimeAI, including graph-based deep learning for predictive modelling, space-time clustering, optimisation, and transformer-based data fusion. The demonstrated applications span multiple domains, such as transport and mobility, crime and policing, and public health.

BIOGRAPHY

Professor Tao Cheng (HDR, PhD, FRGS, FICE, CEng) serves as the Theme Lead for Mobility at the Alan Turing Institute and is a member of the College of Experts (CoE) for the Department for Transport, UK. She is also the Founder and Director of UCL SpaceTimeLab (www.ucl.ac.uk/spacetimelab), a world-leading research center that leverages SpaceTimeAI to gain actionable insights and foresights from spatio-temporal data for government, business, and society.

Her research interests span AI and Big Data, network complexity, and urban analytics with applications in transport and mobility, safety and security, business intelligence, and natural hazards prevention. She has secured more than £25M in research grants in the UK and EU, collaborating with government and industrial partners in the UK, including Transport for London, the London Metropolitan Police Service, Public Health England, and Arup, among others. She has published over 300 research articles and received numerous international best paper awards.

Moderator: Prof. Wu CHEN, Head of LSGI

All are welcome! Please register now to join us on-site!

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