







LSGI & RILS RESEARCH SEMINAR

Urban Networks: Graph Intelligence for Urban Spatial Analysis

-  **17 JUN 2026 (WED)**
-  **10:30 AM - 12:00 NOON**
-  **Z211, POLYU**
-  **ENGLISH**

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ABSTRACT

Cities are complex spatial systems shaped by interactions among people, infrastructure, the built environment, and environmental processes. Recent advances in graph-based artificial intelligence provide new opportunities to model these urban interactions beyond conventional spatial analysis. In this talk, I will introduce my recent research on graph-driven urban spatial analysis, with a focus on how graph neural networks, heterogeneous graphs and human-centred GeoAI can be used to represent urban morphology, mobility, environmental exposure and socio-spatial inequalities. Drawing on case studies from traffic safety, urban climate justice and urban digital twins, the talk will discuss how graph intelligence can support more interpretable, scalable and policy-relevant urban analytics. I will also reflect on future directions for integrating spatial graphs, street-level sensing and urban digital twins to support more inclusive and resilient cities.

BIOGRAPHY

Dr. Pengyuan LIU is currently working as a Lecturer (Assistant Prof) in Digital Planning at the University of Glasgow and also an Associate Editor at an Elsevier journal, City and Environment Interactions. His expertise lies in the field of quantitative urban geography, with a specialisation in GeoAI and urban digital twin research. He holds a PhD in Geography from the University of Leicester, UK. Before joining the University of Glasgow, he served as a Senior Postdoctoral Researcher and Module Coordinator at the Future Cities Laboratory, Singapore-ETH Centre. In 2023, he contributed as a Lecturer in Human Geography and Urban Planning at Nanjing University of Information Science and Technology. His academic journey also includes valuable postdoctoral research experiences at the Urban Analytics Lab at the National University of Singapore and at the University of Helsinki.

Moderator

Prof. Yang XU, Associate Head & Associate Professor, LSGI, member, RILS

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