



# LSGI, RILS & SCRI RESEARCH SEMINAR

## Towards Sustainable Mobility Systems with Big Data Mining

 **27 APR 2026 (MON)**

 **10:30 AM - 12:00 NOON**

 **Z207, POLYU**

 **ENGLISH**

**Prof. Songhua HU**

*Assistant Professor  
Department of Architecture and Civil Engineering  
City University of Hong Kong*



### ABSTRACT

Climate change and population growth pose unprecedented challenges to urban systems. Meanwhile, the proliferation of crowdsensing techniques, such as mobile phones, vehicles, and cameras, has generated vast spatiotemporal data for understanding human activities and their interaction with the urban environment. In this talk, I will first delve into my research on using raw location data collected from millions of mobile phones to estimate and forecast individual human mobility patterns. Building on this foundation, I will demonstrate how it can support mobility decarbonization. Specifically, I will introduce a scalable framework that integrates ubiquitous, multi-structured mobility data to estimate citywide on-road vehicle emissions with high spatiotemporal resolution, followed by an evaluation of various city-scale decarbonization strategies. Lastly, I will highlight opportunities for multidisciplinary collaboration in areas such as energy demand estimation, event response, and environmental exposure to drive broader, more lasting impacts.

### BIOGRAPHY

Prof. Songhua HU is an Assistant Professor in the Department of Architecture and Civil Engineering at City University of Hong Kong. Prior to this, he was a postdoctoral researcher at the MIT Senseable City Lab. He holds a Ph.D. in Civil Engineering from the University of Maryland, College Park. His research focuses on modeling human mobility and human-environment interactions using crowdsourced digital footprints collected from mobile phones, vehicles, social media, and cameras. His work has resulted in over 40 journal papers published in Nature Sustainability, PNAS, Transportation Research Part A/C/D/E, etc., and has been featured in MIT News. He is the recipient of the 2023 University of Maryland Best Doctoral Research Award and the 2023 COTA Best Dissertation Award.

### Moderator:

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

All are welcome! Please register now to join us on-site!  
Enquiry: [lsdept@polyu.edu.hk](mailto:lsdept@polyu.edu.hk)

 **REGISTER NOW**

