



Department of Civil &  
Environmental Engineering  
College of Design and Engineering

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Centre for Transportation Research of Department of Civil and Environmental Engineering

## **Simulation, Optimization and Artificial Intelligence for On-demand Ride Services**

by

**Assistant Professor Ke Jintao**

Department of Civil Engineering  
The University of Hong Kong

Host: Prof Meng Qiang, Director of Centre for Transport Research (CTR), CEE

**Date: 9 March 2023, Thursday**  
**Time: 5 pm – 6 pm**  
**Venue: E5-03-20**  
**4 Engineering Drive 4,**  
**Singapore 117585**  
**College of Design and Engineering**  
**National University of Singapore**



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**\*\*\*Seats are limited. Please register early. All are welcome and admission is free\*\*\***

### **Abstract**

On-demand ride services or ride-sourcing services, offered by transportation network companies like Uber, Lyft and Didi, have been experiencing fast development and steadily reshaping the way people travel in the past decade. This work proposes a novel multi-functional and open-sourced simulation platform for ride-sourcing systems, which can simulate the behaviors and movements of various agents (including drivers and passengers) on a real transportation network. It offers a few accessible portals for users to train and test various optimization algorithms, especially reinforcement learning algorithms, for a variety of tasks, including on-demand matching, idle vehicle repositioning, and dynamic pricing. In addition, it can be used to test how well the theoretical models, developed in the literature for equilibrium analysis and strategic planning, approximate the simulated outcomes. Evaluated by experiments based on real-world datasets, the simulator is demonstrated to be an efficient and effective test bed for various tasks related to on-demand ride service operations.

## Speaker's Biography



**Dr. Jintao Ke** is an Assistant Professor in the Department of Civil Engineering at the University of Hong Kong (HKU). Dr. Ke received his B.S. degree from Zhejiang University, and his PhD degree in Civil and Environment Engineering from Hong Kong University of Science and Technology. Prior to joining HKU, he was a research assistant professor in the Hong Kong Polytechnic University. His research interests include shared mobility on demand, transportation big data analytics, multimodal intelligent transportation systems, transportation pricing, short-term travel demand forecasting, etc. The vision of his research is to develop novel models, algorithms, and conduct data-driven quantitative analyses to better manage, operate, and regulate shared mobility and other emerging mobility services. He has published more than 30 SCI/SSCI indexed research papers in top-tier journals in the field of transportation research and data mining, including Transportation Research Part A-E, IEEE Transactions on Intelligence Transportation System, IEEE Transactions on Knowledge and Data Engineering. He was awarded the Honorable Mention of HKSTS Outstanding Dissertation Award in 2020. He serves as an early-career Advisory Board Member of Transportation Research Part C, guest editors and referees for a few top transportation journals.

**General Enquiry: Ms Asmidah Tel: 6516 4776, Email: [asmidah1@nus.edu.sg](mailto:asmidah1@nus.edu.sg)**

### Map of Seminar Room E5-03-20. 4 Engineering Drive 4, Singapore 117585

Seminar Room (E5-03-20) is on floor 3.

