Draft Call for Papers, Special Issue on:

Emerging Methods for Data-driven Urban Transportation and Mobility Modeling: Machine Learning and Complexity Approaches

Introduction

The advances in ICT and passive data collection techniques are generating large quantities of individual movement and travel activity trajectory data on a continuous basis, such as call detailed records, smartphone GPS observations, social media posts (e.g., Twitter), transit smart card transactions, license plate recognition records, and shared mobility data. These data sets have allowed us to observe and model individual mobility pattern and travel behavior with unprecedented spatiotemporal resolution, shifting our understanding on urban transportation and mobility from random to predictable. With the emergence of these large-scale data sets, the field of transportation research is also calling for new models, methodologies, and analytical frameworks for researchers and practitioners to better understand complex interactions between transportation networks and urban mobility, and build smart transportation systems of the future.

The models and tools from machine learning and complexity research have shown great potential to deal with and get insights from individual-based trajectory data sets in a variety of fields and applications, such as trip/route recommendation systems, spatiotemporal traffic prediction, and agent-based epidemic spreading and social diffusion analysis. In travel behavior research, machine learning and complexity approaches have also demonstrated a great potential in depicting the underlying patterns of human mobility from individual/collective traces. Developing these new tools and models for urban traffic and mobility has become an excited interdisciplinary research direction beyond transportation, attracting researchers from computer science, statistical physics, urban planning, public health, and also social sciences.

Scope of the special issue

The focus of this special issue is to integrate the emerging individual-based 'big-data' with the recent advances in machine learning and complexity research to build new frameworks for urban traffic/mobility modeling and prediction. Potential topics of interest include, but are not limited to:

- Recognizing patterns in aggregate and individual mobility and activity choices.
- Generative and predictive models for individual mobility and activity behaviors.
- Mobility synthesis algorithms for agent-based simulations.
- Large-scale spatiotemporal trajectory data set network modeling and analysis.
- Smart routing/trip planning and recommendation algorithms learned from collective travel data.
- Network-scale travel demand and road traffic forecasting.
- Social and physical diffusion processes resulted from urban mobility.
- Complexity of urban transportation network morphology and urban growth.
- Spatial interactions in cities as a complex system.

Submission method

Guidelines for manuscript submission can be referred to https://www.evise.com/evise/jrnl/TRC.

When submitting your manuscript, please choose "VSI: Complexity" for "Article Type". This is to ensure that your submission will be considered for this Special Issue instead of being handled as a regular paper.

Important dates

Papers will be reviewed upon receiving in the open window (October 10th, 2018 - April 30th, 2019), and a decision for each paper will be made as soon as the review process is complete. Therefore, early submission is encouraged for an early decision. Below are the deadlines for paper submission and reviews.

- Special issue article type becomes available in EVISE: October 10th, 2018
- Submission deadline: April 30th, 2019
- Author notification of first round of reviews: June 30th, 2019
- Author notification of second round of reviews (if needed): August 31th, 2019
- Special issue completed: October 31st, 2019

Guest Editors

- Dr. Lijun Sun, Assistant Professor, *lijun.sun@mcgill.ca*
  Department of Civil Engineering and Applied Mechanics, McGill University, Canada

- Dr. Zhengbing He, Professor, *he.zb@hotmail.com*
  College of Metropolitan Transportation, Beijing University of Technology, China

- Dr. Samiul Hasan, Assistant Professor, *samiul.hasan@ucf.edu*
  Department of Civil, Environmental, and Construction Engineering, University of Central Florida, United States.

- Dr. Meead Saberi, Senior Lecturer, *meead.saberi@unsw.edu.au*
  School of Civil and Environmental Engineering, University of New South Wales, Australia

- Dr. Kay W. Axhausen, Professor, *axhausen@ivt.ethz.ch*
  Institute for Transport Planning and Systems (IVT), ETH Zurich, Switzerland