Shenzhen, and Beyond

ICUI Post-workshop

Date: Jun. 27 2019

Location: Shenzhen University, Shenzhen

Morning	**Academic workshop**
8:45-9:00 am	Welcome, President Li Qing-Quan, Prof. Guo Ren-Zhong
9:00-9:25 am	Exploring Migrants' Activities in Urban Space and Social Interactions: A Big Data Approach. **Presenter**: Yang Yue, Shenzhen University
9:25-9:50 am	Urban Park Green Spaces Provision: Shenzhen and Beyond **Presenter**: Shiliang Su, Wuhan University
9:50-10:15 am	Urban Informatics – Some Practice and Thoughts **Presenter**: Yang Xu, Hong Kong Polytechnic University
10:15-10:35 am	**Coffee break**
10:35-11:00 am	Individual Accessibility Studies using Spatiotemporal Big Data: A Case Study in Shenzhen, China **Presenter**: Biyu Chen, Wuhan University
11:00-11:25 am	Understanding Urban Systems with "Big Data": Applications in The Pearl River Delta Metropolitan Areas **Presenter**: Yiming Chen, Sun Yat-sen University
11:25-11:50 am	Portraying Urban Dynamic: Using Multi-Source Urban Data to Sense Invisible City **Presenter**: Wei Tu, Shenzhen University
11:50 -12:30	Discussion & Data Release Announcement
Lunch	**Shenzhen University**
Afternoon	**Field trip**
2:30 - 5:00 pm	Visit Shenzhen Intelligent Operations Center
5:00 – 7:00 pm	Return to Hong Kong

Organizer:

Department of Urban Informatics, School of Architecture and Urban Planning, Shenzhen University
Guangdong Key Laboratory of Urban Informatics, Shenzhen University
Shenzhen Key Laboratory of Spatial Smart Sensing and Service, Shenzhen University.
Research Insititute of Smart Cities, Shenzhen University
Department of Land Surveying and Geo-Informatics, Hongkong Polytechnic University.

Title: Exploring Migrants' Activities in Urban Space and Social Interactions: A Big Data Approach.

Presenter: Prof. YUE Yang is a Professor in the Department Urban Informatics at Shenzhen University, with background in Geomatics, GIS, and urban planning. Her research interests focus on solving urban problems using quantitative data analytics approaches and has published several highly-cited and most cited papers. She services as the PI for a national key research grant and other national science foundation projects, and committee members in local and international GIS, computer, transportation, and urban planning academic advising organizations.

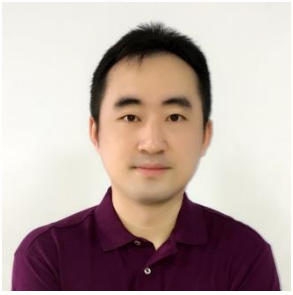
Abstract: This talk will present some work that we have done in Shenzhen, exploring social issues using transit smart card data. As a typical migration city, migrants bring vibrancy into this city; in the meantime, we wonder whether they are encountering some difficulties in the city. One of the concern is affordable housing due to the soaring property prices in recent years, another concern is whether there is social segregation between the new migrates and the settled residences. During the studies, big data played a major role in establishing the research framework, and we believe big data could facilitate us better understand human activities and the interactions with surroundings in future studies.

Title: Urban Park Green Spaces Provision: Shenzhen and Beyond

Presenter: Dr. Shiliang Su is an Associate Professor in the School of Resource and Environment Sciences, Wuhan Univerisity. He is the Luojia Young Talented Scholar. His research focuses on two issues related closely to China's mega-urbanization: land use change and environmental health. He is interested in employing advanced geospatial tools and new data sources to bridge environmental science and policy.

Abstract: Urban park green space is an important part of the urban ecosystem. Health-oriented urban design and spatial planning emphasize on the rational layout and the equity of the park green space supply. What kind of spatial characteristics does the park green space supply in Shenzhen show? Is it socially equal? How is it related to the health of residents? Can we reduce the social inequality of Shenzhen residents' health? With the rapid urbanization, how do the characteristics of park green space supply and its health effects change? How to further optimize the layout of the park green space? This report is intended to provide preliminary answers to these questions.

Title: Urban Informatics – Some Practice and Thoughts



Presenter: Dr. Yang Xu is an Assistant Professor in the Department of Land Surveying and Geo-Informatics at the Hong Kong Polytechnic University. His research interests lie at the intersection of GIS, transportation, and urban informatics. Leveraging big data, Xu's work focuses on the quantification and modeling of human activities in cities, aiming to reveal their linkage with urban and technological developments, and their impact on future economic, social and transportation systems.

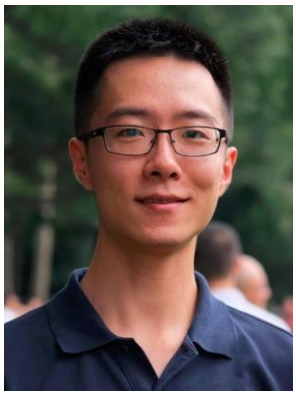
Abstract: Urban informatics as a transdisciplinary field has drawn considerable attentions in recent years. The ways we describe and understand cities are being transformed by the increasing development of ICT, sensing technologies, and analytical capabilities. This talk will highlight a few study cases conducted across different global cities (e.g., Shenzhen, Shanghai, Singapore, Boston), and meanwhile, reflect on the future of urban informatics, and the key questions and challenges to be addressed.

Title: Individual Accessibility Studies using Spatiotemporal Big Data: A Case Study in Shenzhen, China

Presenter: Dr. Biyu Chen is a Professor at State Key Labor. of Information Engineering in Surveying, Mapping and Remote Sensing, Wuhan University, China. His major research interests span GIS for Transportation, Spatiotemporal Big Data Analytics, Intelligent Transportation Systems, Transport Geography, Urban Geography and Urban Information System. He is the author of about 40 articles in the leading journals of Geography, GIS and Transportation fields, such as Annals of AAG, IJGIS, TRA and TRB. He is the Associate Editor of Transportmetrica B (2016 -).

Abstract: Accessibility is a core concept referring to the ease with which activity locations can be reached by individuals using a particular transport system. Theoretically, the accessibility of an individual depends on three components: urban service spatial distribution, transportation network performance, and individual mobility and socioeconomic characteristics. However, most existing accessibility studies rely on aggregated place-based accessibility measures by ignoring the people component, due to the lack of disaggregated individual-level mobility data. In this presentation, a comprehensive case study of using spatiotemporal big data to investigate individual accessibility in Shenzhen will be given. The impacts of human mobility on accessibility equity of more than 6 million individuals across the entire city will be discussed. Results enrich our understandings of how land use influences relationships between human mobility and accessibility, and also have several implications for including human mobility, time dimension, and travel time reliability into accessibility evaluations.

Title: Understanding Urban Systems With “Big Data”: Applications in The Pearl River Delta Metropolitan Areas



Presenter: Dr. Yimin Chen is an Associate Professor of GIS at the School of Geography and Planning, Sun Yat-sen University. His research areas include urban big data analysis, machine learning applications and land use change modeling. His research activities concern the use of machine learning methods and big data to understand human behaviors and urban structure, the development of land use change models, and methods for projecting the socioeconomic and environmental impacts of future land use change. Five of his published papers have been awarded ESI Highly Cited Papers. He had been awarded outstanding reviewers by the journals *Landscape Urban Plan*, *Comput Environ Urban* and *Sustain Cities Soc*.

Abstract: “Big data” analysis has become an important complementary approach to conventional methods for understanding urban systems. This presentation mainly discusses the strengths and challenges of “big data” for understanding urban systems. Three case studies in the Pearl River Delta metropolitan areas are presented: (1) Understanding the spatial organizations of intra-urban functions and activities, (2) Evaluating the conditions of rental housing and public services, and (3) Practices of monitoring urban systems with “big data”. Based on these case studies, the potential limitations and challenges of urban “big data” are then discussed.

Title: Portraying Urban Dynamic: Using Multi-Source Urban Data to Sense Invisible City

Presenter: Dr. Wei Tu is an Assistant Professor in the Department of Urban Informatics, School of Architecture and Urban Planning, Shenzhen University. He has been a visiting scholar at the Senseable City Laboratory, MIT. He has been reward the talented young scholar of Shenzhen University. His research interests focus on the urban informatics, including data-driven human activity-mobility (i.e., taxi GPS, bus GPS, smart card data, social media, data, mobile phone data, and etc.), multi-source geospatial data fusion, and smart transportation.

Abstract: The convergence of ICT and smart cities enable us to produce and acquire massive and multi-sourced urban data. This presentation mainly focuses on alternative approaches to portraying the invisible urban space by fusing multi-sourced urban data. (1) massive detailed daily human activities are extracted by integrating mobile phone data and social media check-in to reveal diurnal activity dynamic. (2) urban functional dynamic is discovered using mobile phone data and remote sensing imaginaries. (3) urban vibrancy dynamic is described by new urban data, including mobile phone data, social media check-ins, and points-of-interests. These results will deepen the understanding of urban spaces and provide new insights for smart cities.

Data Release Announcement

In 2015 and 2016, we hosted two “International Open Data Challenges” and released some urban trajectory data to promote related research. This year, we will reopen the challenge, and release a set of pre-processed transit smart card data in Shenzhen city, China to continue encouraging open data, open source, and reproducible research. Detail will be announced at the workshop.

Field trip: visit Shenzhen Intelligent Operations Center (IOC)

Shenzhen Intelligent Operations Center (IOC) integrates datasets from local governments and communities. By fusing multi-source urban Big Data, IOC performs comprehensive sensing, forecasting, and early warning of city operations. IOC provides a) advice for decision makers, b) collaborative service for local governments, and c) information service for urban governances. IOC aims to build the next generation city operation modes in the era of smart city.