

Spatial Data Science Symposium 2021

Session Proposal

Name of the session: Examining social connection and segregation by leveraging emerging mobility data

Type of the session: a series of presentations

Short description of the session:

Segregation that directly reflects and exacerbates social inequalities is a long-standing social phenomenon, which not only harms the socially vulnerable populations but also produces negative impacts on society as a whole. Effectively measuring and better understanding the nature of social segregation are of great importance for urban planning and policymaking. Existing studies primarily examine spatial and residential separations among different social or racial population groups. However, with the advancement of transportation and communication technologies, people's activities and social interactions are no longer limited to their residential areas. Therefore, there is a growing necessity to investigate social segregation from a mobility perspective by considering peoples' non-residential activities and the homophily of mobility patterns in the interconnected society.

With the advancement of mobile sensing technologies, smartphones have become a game-changing data acquisition platform. Various emerging data can be collected from mobile phones (e.g., social media, smartphone sensors [e.g., GPS receiver], cellular signals). These individual-level mobility data sources effectively capture fine-grained activity and mobility patterns from a huge number of users with little or zero extra cost and pave a new way for researchers to re-assess social segregation by incorporating individuals' activities and mobility patterns into the analytical frameworks.

This session consists of four distinctive research works that introduce new methods and applications in segregation studies using three different mobility data sources, i.e., social media data, smartphone GPS data, and cellular signals. Through this session, we aim to promote the discussion of the opportunities, challenges, solutions, and visions of utilizing emerging mobility data to foster the understanding of human mobility in social domains.

Session organizers:

Xiao Li, Associate Transportation Researcher, Texas A&M Transportation Institute

Xiao Huang, Assistant Professor, Department of Geosciences, University of Arkansas

Yang Xu, Assistant Professor, Department of Land Surveying and Geo-Informatics, The Hong Kong Polytechnic University

Qunying Huang, Associate Professor, Department of Geography, University of Wisconsin-Madison

Confirmed speakers & presentations:

Title	Speakers
Measuring segregation from human-based perspective: a data-driven revolution of segregation measurement	Meiliu Wu & Qunying Huang <i>University of Wisconsin-Madison</i>
Quantifying segregation in an integrated urban physical-social space	Yang Xu <i>The Hong Kong Polytechnic University</i>
Unfolding community homophily in U.S. metropolitans via fine-grained mobile phone location data	Xiao Huang <i>University of Arkansas</i>
Aggravated social segregation during the COVID-19 pandemic: evidence from crowdsourced mobility data in twelve most populated U.S. metropolitan areas	Xiao Li <i>Texas A&M Transportation Institute</i>

Expected participation:

Mobility data analysis is a crucial component of spatial data science. Effectively using mobility data to quantify social segregation and unfold social inequity has significant implications for urban planning and policymaking. Therefore, we believe this session could attract and benefit participants from different domains, including but not limited to spatial data science, human geography, urban geography, urban planning, equity & sustainability, computational social science, among others.