The Chinese University of Hong Kong
Department of Geography and Resource Management

will present a seminar

by

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Big Data Analytics in Geography: Crowd Dynamics in Protest and Beyond

Abstract:

This presentation illustrates the art and science of big data analytics in geography, with applications in counting static and mobile crowds in Hong Kong as examples. Using aerial photographs and Geographic Information System (GIS), the crowd size of June 4th Candlelight Vigil was estimated based on varying crowd densities. Extending this GIS approach a step further, this research also simulated a mobile crowd marching from Victoria Park towards Central, a route common to in HK protests such as the annual July 1st rally. The research objective was to develop a framework to better understand human dynamics by leveraging computer simulation and crowdsourced data. The proposed framework includes the following steps: 1) collect and analyze small area population movement (i.e. locations over time) from big data sources, 2) reconstruct the moving crowd during the rally (e.g. extracting the starting time, varying density, walking velocities, and entry/departure gateways, etc.), 3) simulate the moving crowd in a based on the parameters from previous steps. Using an agent-based model, each individual was encoded as an agent with associated rules to define their crowd behaviors in walking, stopping and personal spacing. Moreover, this geocomputation approach also integrates a deep learning algorithm to detect and track human objects at specific checkpoints along the rally to better calibrate model parameters. The talk will also feature ongoing research to utilize interdisciplinary approach to extract flood analytics and real-time risk communication in disaster research. The intellectual merits and research findings shed useful insights to improve static and mobile population estimation, and leverage alternative data source to support related scientific applications.

About the Speaker:

Dr. T. Edwin Chow is an associate professor in the Department of Geography at Texas State University. His research interests focus in geocomputation and human dynamics. He has published dozens of empirical and theoretical articles in peer-reviewed journals, book chapters and refereed conference proceedings. Edwin received contracts/grant funding from NSF, AAG, and Census Bureau. His recent projects investigate the potential of big data, including web demographics and social media, to unearth spatial patterns of human movement in dynamic events, e.g. disaster response, protest, etc.

Language: English
Date: 9 January 2020 (Thursday)
Time: 4:30-6:00pm
Venue: Room 221
Chen Kou Bun Building
Chung Chi College

~All are Welcome~

For any inquiries, please contact Prof. Harry Lee (Tel. 3943 8478 or Email: harrylee@cuhk.edu.hk).

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