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Journal of Theoretical & Computational Science

Social Sensing and Big Data Analytics: from Disaster Management to Public Health

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Abstract

Rapid onset disasters, often difficult to prepare for and respond to, make disaster management a challenging task worldwide. Traditional data collection methods such as remote sensing and field surveying often fail to offer timely information during or immediately following disaster events. Social sensing enables all citizens to become part of a large sensor network, which is low cost, more comprehensive, and always broadcasting situational awareness information. However, data collected with social sensing (such as tweets) is often massive, heterogeneous, noisy, and unreliable from some aspects. Together, these issues represent a grand challenge toward fully leveraging social sensing for disaster management decision making under extreme duress. This talk reports our recent efforts on leveraging social sensing and big data analytics to support disaster management. Using real world application examples, this talk identifies the key challenges of using big social sensing data for disaster management and introduces our solutions. Lastly, a research example of using social media data to track the population movement during COVID-19 pandemic is discussed to demonstrate how social sensing and big data analytics can be used in public health research.

Biography

Dr. Zhenlong Li joined the Department of Geography as an Assistant Professor in 2015 after receiving his Ph.D. in Earth Systems and Geoinformation Sciences from the George Mason University (GMU). He holds a B.S. (2006) in GIS from Wuhan University and an M.S. (2010) in Earth System Science from GMU. Currently, he serves on the Editorial Boards of ISPRS International Journal of Geo-Information and PLOS ONE, as Chair of the Cyberinfrastructure Specialty Group of Association of American Geographers (AAG), Co-Chair of the Cloud Computing Group of Federation of Earth Science Information Partners (ESIP), and on the Board of Directors of the International Association of Chinese Professionals in Geographic Information Sciences (CPGIS).

Publications

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2. Li Z., Hodgson M., Li W., (2018) A general-purpose framework for large-scale Lidar data processing, International Journal of Digital Earth, 11(1), 26–47.

Citation: Zhenlong Li: Social Sensing and Big Data Analytics: from Disaster Management to Public Health, Big Data 2020, 2nd International Conference on Big Data Analytics & Data Mining, Singapore, July20,2020, pp 1