NSF Spatiotemporal Innovation Center
Jan 2022 Monthly Newsletter

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https://www.stcenter.net/

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Spatial Data Lab Recent Updates

A free license KNIME server has been installed for reproducible, replicable, and generalizable spatiotemporal research. It allows multiple users to run and edit workflows in the cloud at the same time. A paper "Multiscale Effects of Multimodal Public Facilities Accessibility on Housing Prices Based on MGWR: A Case Study of Wuhan, China" had been published in ISPRS International Journal of Geo-Information. A paper "Assessing Reliability of Geotagged Social Media Data for Spatiotemporal Representation of Human Mobility: A Comparison between Sina Weibo and Baidu Qianxi" was submitted to ISPRS International Journal of Geo-Information. A series of Weibo indices mobility measurements were calculated by using Weibo data. 2 nodes of the Spatial Data Science Workbench are created. Case studies from 8 chapters in the book "Quantitative Methods and Socio-Economic Applications in GIS" have been reproduced.

For further information and/or inquiries, please email Mr. Hanchen Yu at hanchenyu@fas.harvard.edu.

GMU Graduate Student, Yun Li, Named as a 2021 NSF Computing Innovation Fellow

Dr. Yun Li, a Ph.D. graduate from The NSF Spatiotemporal Innovation Center Mason site was selected by the National Science Foundation for her work on "Utilizing Deep Learning and Multi-Source Earth Observations for Air Quality Data Reconstruction and Downscaling". This two-year early career experience award will enable Dr. Li to spend two years as a Postdoctoral fellow with Dr. Liang Zhao at Emory University (a Co-PI of the NSF Spatiotemporal I/UCRC) to develop cutting-edge spatiotemporal tools for air quality downscaling and reconstruction in response to the global air pollution problem. This honor marks her as a Computing Innovation Fellow for the 2021 Cohort with the Computing Research Association (CRA) and the Computing Community Consortium (CCC).

GIS Data Science and Big Data Projects at Harvard CGA

Interactive Analysis of Big Geospatial Data with High-Performance Computing has been accepted to be presented in ESRI User Conference 2022. It is also under review to be published in the journal of *Transactions in GIS*. Our work on *High Performance Computing for Address Level Climate Data Extraction* is scheduled to be presented in the upcoming American Association of Geographers (AAG) 2022. In addition, every tweet has been enriched in Harvard CGA's Geo-tweet Archive (~10 Billion tweets) with two key variables, *Sentiment* and *Geography* using advanced GIS Data Science techniques and Machine Learning. This enriched data will be useful for a wide range of research applications involving the use of social media data. The dataset is available for use for all Harvard researchers.

For further information and/or inquiries, please email Devika Kakkar at kakkar@fas.harvard.edu.

C2M2 Project Updates

The C2M2 team is currently working on the final report of the program. We are also working on finalizing relevant materials (e.g., Story Maps, Recorded Videos) to be posted online (e.g., MAPGIVE's website [https://mapgive.state.gov/] and YouTube account). The team is also actively working on writing peer-reviewed research papers based on the C2M2 project. One paper that will appear soon investigates the impacts of the COVID-19 pandemic on people's access to water and toilet facilities by utilizing current data and GIScience methods. We will work on more papers to disseminate important findings of the C2M2 projects. Please stay tuned!

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