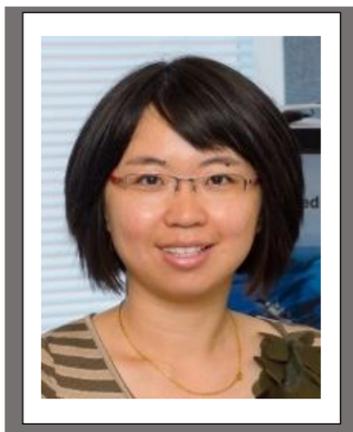


A Knowledge-driven Cyberinfrastructure for Sustained Geospatial Innovation

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Biography

Dr. Wenwen Li is an Associate Professor in the School of Geographical Sciences and Urban Planning at Arizona State University. Her research interest is cyberinfrastructure, space-time big data, machine learning, scientific visualization and their applications in multiple Earth science and social science disciplines, such as polar sciences, natural disaster, terrain analysis and modeling, urbanization, etc. Over the years, she has served as the PI of multiple federal grants, from NSF and USGS. She was also the 2015 NSF CAREER award winner. For more information, please visit: www.public.asu.edu/~wenwenl1

Abstract

This talk introduces the outcome of a NSF CAREER project that aims at establishing a knowledge-driven cyberinfrastructure for geospatial innovation. Different from traditional CyberGIS platforms, which are largely HPC centered or data-driven, this new infrastructure intends to integrate machine intelligence into problem solving environments to further accelerate the knowledge discovery process. There are three essential components in such a knowledge infrastructure: a data discovery component which supports large-scale web crawling to identify geospatial datasets, a smart workflow chaining mechanism to support intelligent question answering related to space and time, and a cyber-visualization component to support on-the-fly rendering of big spatial data and online spatiotemporal analytics. These components are seamlessly integrated into a cyberinfrastructure platform using a service-oriented approach to enable collaborative decision-making. We have successfully applied the solution framework into problem solving at the poles, since the polar regions are one of the Earth's remaining grand frontiers, they are the key moderator of the global climate and currently at high risk of the global change. We expect this work to not only advance geospatial sciences but also improve our understanding of the polar system and its impact on the environment, people, and society through geospatial innovation.