



## Sensor Web: Research Challenges and Opportunities

Rhodes Hall 310: October 24, 2012 @ 12:00PM



ISN Seminar Speaker:

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### Abstract

In this talk, we discuss several research challenges and opportunities of sensor web in environment monitoring, smart grid and smart environment. During 2006-2009, we designed and deployed the first space in-situ sensor web for volcano monitoring collaborating with USGS and JPL in a NASA ESTO project. We are currently advancing this research agenda to create a new paradigm, VolcanoSRI (Volcano Seismic Realtime Imaging), for imaging the 4D volcano tomography in a large-scale sensor network, together with UNC and MSU in a NSF CDI project. A future effort aims to integrate seismic tomography, InSAR and deformation model to make the fictional holographic projector known as Virgil in the film "Supervolcano" a reality. We are also collaborating with Cornell and UC Berkeley to investigate several key aspects of a computation and information foundation of the Smart Grids in a NSF CPS project. We are studying distributed demand and response algorithms and designing an open and scalable experimental platform for smart grid, known as SmartGridLab, that integrates a hardware testbed with a software emulator, allowing software virtual nodes to interact with physical nodes in the testbed. We also discuss several research opportunities on smart environments, with the goal of enabling smart healthcare and ambient intelligence. The details of those forementioned research projects are at <http://sensorweb.cs.gsu.edu/?q=research>.

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### Biography

WenZhan Song is an Associate Professor of Computer Science and Director of Sensorweb Research Laboratory at Georgia State University. His research interest is mainly on sensor web and its applications in environment monitoring, smart grid and smart environment, where sensing, computing, communication and control play a critical role and need a transformative study. His research has received \$6 million+ research funding from NSF, NASA, USGS, Boeing and etc since 2005. Dr. Song is a recipient of Outstanding Research Contribution Award (2012) in GSU Computer Science, Chancellor Research Excellence Award (2010) in WSU Vancouver and NSF CAREER Award (2010). His research has been featured in MIT Technology Review, Network World, Scientific America, New Scientist, National Geographic, etc. He is an associate editor of IEEE Transaction of Parallel and Distributed Systems, and senior member of IEEE and ACM. During his PhD study, he was a recipient of 2004 National Outstanding Oversea Student Scholarship, awarded by Ministry of Education of China (only 40 awarded in USA). He worked in Shanghai Bell-Alcatel as a software engineer and team leader during 1999-2001.