Northeastern University
Distinguished Seminar Series
Civil & Environmental Engineering

Ming L. Wang, Ph. D.

COE Distinguished Professor
Department of Civil and Environmental Engineering
Northeastern University

Sensor-Enriched Sustainable and Secured Infrastructure Systems

Civil infrastructure, in both its construction and maintenance, represents the largest societal investment in this country, outside of the health care industry. Despite being the lifeline of US commerce, civil infrastructure has scarcely benefited from the latest sensor technological advances. Our future should focus on harnessing these technologies to enhance the robustness, longevity and economic viability of this vast, societal investment, in light of inherent uncertainties and their exposure to service and even extreme loadings.   A variety of urban infrastructure should take advantages of these technologies including Bridges, Buildings, Tunnels, Waterways, and Utility Networks. The goal is to implement these technologies in existing structures, as well as incorporating them into new paradigms for infrastructure design to enhance the life cycle of the vast existing infrastructure system.   One of the principal means of insuring the robustness and longevity of infrastructure is to strategically deploy smart sensors in them. Therefore, the objective is to develop novel, durable, smart sensors that are especially applicable to urban infrastructure and the facilities to validate their reliability and long-term functionality. In some cases, this implies the development of new sensing elements themselves, while in other cases involves innovative packaging and use of existing sensor technologies. In either case, a parallel focus will be the integration and networking of these smart sensing elements for reliable data acquisition, transmission, and fusion, within a decision-making framework targeting efficient management and maintenance of infrastructure systems.
In this talk, we will discuss about our work at Northeastern University in developing prudent and viable sensor technologies and providing services to very large structural systems including roadways, bridges, and waterway for safety, maintenance, and long term saving. Field applications on two bridges will be the focus of the talk.

Ming Wang is a Distinguished Professor of Civil and Environmental Engineering at the Northeastern University. Professor Wang research areas are in Sensor Technology and Sensor Networks for Civil Infrastructure applications. He is currently the PI and Director for VOTERS sensor system, VOTERS (versatile onboard traffic-embedded roaming sensors) aims to provide a continuous stream of accurate, up-to-date information about the state of roadways and bridge decks gathered by sensor systems mounted on vehicles of opportunity, while also eliminating the hazardous, congestion-prone work zones that are often set up to gather this critical data. The VOTERS project is funded under the TIP program of the NIST and will run for five years at a total cost of $16 million, including cost-sharing by the project participants. The VOTERS team includes about 40 members including faculties, research scientists, administrative staffs, and graduate students from three universities as well as the research engineers and consultants from several industrial partners. He has published more than 250 papers in various journals (85), conference proceedings (165), book chapters, and edited books.

Thursday, February 9, 2012
12:00 p.m. – 1:00 p.m.
335 Shillman Hall