DEPARTMENT OF CIVIL, STRUCTURAL AND ENVIRONMENTAL ENGINEERING

University at Buffalo The State University of New York

CSEE GRADUATE STUDENT ASSOCIATION

Student Chapter University at Buffalo

MCEER EARTHQUAKE ENGINEERING TO EXTREME EVENTS

Engineering Seminar

"SOFTWARE FOR MEASURING DISASTER COMMUNITY RESILIENCE ACCORDING TO THE PEOPLES METHODOLOGY"

Dr. Gian Paolo Cimellaro

Assistant Professor in the Politecnico di Torino, Italy

Abstract

The concept of Disaster Resilience has received considerable attention in recent years and it is increasingly used as an approach for understanding the dynamics of natural disaster systems (e.g., L'Aquila and Haiti earthquake, Hurricane Katrina, September 11th terrorist attack, etc.). Recently the PEOPLES Resilience Framework has been developed which is expanding previous research at MCEER linking several previously identified resilience dimensions (technical, organizational, societal, and economic). It includes seven dimensions that describe different social, economical and engineering aspects. Among the different dimensions, the one of the physical infrastructure incorporates facilities and lifelines as well as the transportation network.

In this seminar the concept of graph theory is presented and used for the road network topological characterization, while performance measures are also provided to estimate the impact on end users after internal or external disruptions. A performance index for evaluating functionality of a road network during extreme events such as earthquakes is presented. The highways of the state of Minnesota have been used as a case study to illustrate the methodology. A second case study showing the post disaster recovery of l'Aquila earthquake is shown using the PEOPLES methodology that has been implemented in a software and its first release is presented for the first time in this seminar.

DATE: **Friday, March 04, 2011**

TIME: **12:30 P.M.**

LOCATION: **140 KETTER HALL, NORTH CAMPUS, UNIVERSITY AT BUFFALO**

ORGANIZED AND SPONSORED BY: ***Student Chapter of EERI at UB, CSEE-GSA, MCEER and Dept. of CSEE***

Snacks and Refreshments will be served!

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Assistant Professor in the Politecnico di Torino, Italy

Dr. Gian Paolo Cimellaro is an Assistant Professor in the Politecnico di Torino, Italy since 2008. He received the degree in Civil Engineering cum laude in 2001 from the University of Rome "La Sapienza". He is a Professional Engineering of the Bulletin Board of Engineers of Rome since 2001. He received his M.S. in Earthquake Engineering from the University at Buffalo (SUNY) in 2004. He received the Ph.D. degree in Civil Engineering curriculum structural- seismic from the University of Pavia in 2007 and the Ph.D. degree from the University at Buffalo in 2008.
He has been a postdoctoral research associate from January 2008 until December 2008, and during this period conducted shaking table tests of suspended ceiling systems. He has also experience as a consultant hydraulic engineer (2003) and is currently consultant Engineer of the ARPA-Seismic Department of the Piedmont region.

Dr. Cimellaro's primary field of research is Earthquake Engineering with emphasis on defining Quantification of Resilience of systems. His research has focused on developing integrated regional models for estimating losses from future earthquakes, particularly focusing in health care facilities. His current research addresses community disaster resilience and sustainability as well as mitigation of physical infrastructural systems. He is currently a Principal investigator of the European Project ICRED- Integrated Community Resilience of European Disasters. He is also PI of the project entitled "Guiding L'Aquila reconstruction after 2009 Earthquake rebuilding a resilient city to multiple hazards", sponsored by the MITOR PROJECT/MISTI Global Seed Funds in collaboration with MIT. Dr. Cimellaro's current research interests also include structural vibration control using active, passive and semi-active Control systems.

Dr. Cimellaro has authored 22 journal papers, 49 international conference proceedings, and 2 book chapters, while he has been invited to 14 seminars in the US, Canada and Europe.