

RICHARD E. CHRISTENSON

Associate Professor

University of Connecticut

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A. Professional Preparation

University of Notre Dame, Notre Dame, IN, Civil Engineering, B.S., 1994.

University of Notre Dame, Notre Dame, IN, Civil Engineering & Geo. Sci., Ph.D., 2002.

B. Appointments

Associate Professor. Dept. of Civil & Env. Engr., University of Connecticut, 2010-present.

Assistant Professor. Dept. of Civil & Env. Engr., University of Connecticut, 2006-2010.

Assistant Professor. Division of Engineering, Colorado School of Mines, 2002-2005.

Visiting Professor. Dept. of Mech. Engr., Nihon University, Tokyo, Japan, Summer 2003.

Associate Engineer, DeLeuw, Cather & Company, Chicago, IL & Denver, CO, 1994-1996.

C. Publications

Relevant Publications

1. R.E. Christenson, Y.Z. Lin, A.T. Emmons and B. Bass "Large-Scale Experimental Verification of Semiactive Control through Real-Time Hybrid Simulation", ASCE Journal of Structural Engineering, 134(4), pp. 522-535, 2008.
2. R.E. Christenson and Y.Z. Lin "Real-Time Hybrid Simulation of a Seismically Excited Structure with Large-Scale Magneto-Rheological Fluid Dampers," Hybrid Simulation Theory, Implementations and Applications, edited by V.E. Saouma and M.V. Sivaselvan, Taylor and Francis NL, ISBN: 978-0-415-46568-7, 2008.
3. Y.Z. Lin and R.E. Christenson, "Proposed Real-Time Multi-Site Hybrid Testing System applied to a Seismically Excited Building with Magneto-Rheological Fluid Damper", 2007 Structures Congress & Exposition, Long Beach, CA, May 2007.
4. L. Loebach, C. Ward, R.E. Christenson, K. Seto, and S.J. Dyke, "A Hybrid Experiment for Examination of Structural Control Considering Soil-Structure Interaction", presented at the 2006 Structures Congress & Exposition, St. Louis, MO, April 2006.
5. R.E. Christenson, "Bringing the UCIST Bench-Scale Shake Table onto the NEESgrid", NEESit Seismos, Issue 7, <http://it.nees.org/seismos/2005-11/index.php>, Nov., 2005.

Other Relevant Publications

1. K.Makita, R.E. Christenson, K. Seto, and T. Watanabe "Optimal Design Strategy of Connected Control Method for Two Dynamically Similar Structures", ASCE Journal of Engineering Mechanics, 133, 1247 (2007).
2. J. Erramouspe, P.D. Kiouisis, R.E. Christenson, T. Vincent "A Resetting Stiffness Dynamic Controller and its Bench-Scale Implementation," Engineering Structures, Volume 29, Issue 10, pp. 2602-2610 (2007).
3. R.E. Christenson, B.F. Spencer, Jr., E.A. Johnson "Semiactive Coupled Building Control for Adjacent Multi-Degree of Freedom Buildings," ASCE Journal of Engineering Mechanics, 133, 290 (2007).
4. W. Reynolds and R.E. Christenson, "Bench-Scale Nonlinear Test Structure for Structural Control Research", Engineering Structures, 28(8), pp. 1182-1189, 2006.
5. R.E. Christenson, B.F. Spencer, Jr., E.A. Johnson, "Experimental Verification of Smart Cable Damping," ASCE J. Engr. Mechanics, 132(3), pp. 268-278, 2006.

D. Synergistic Activities

Innovation in Teaching: I have conducted efforts within the Network for Earthquake Engineering Simulation (NEES) community to provide teleoperation and teleparticipation capabilities to educational laboratory equipment. These activities provided the basis for the award of an NSF Course Curriculum and Laboratory Improvement (CCLI) grant for the full-scale development of instructional shake tables in earthquake engineering, structural dynamics, and advanced technologies in civil engineering education. These cyberinfrastructure tools have been incorporated into the Structural Engineering Module of a Freshman-level Foundations of Engineering course at the University of Connecticut providing teleoperation and teleparticipation of an instructional shake table located in my Laboratory. The tools are being used in the classroom at other universities across the country including Washington University in St. Louis, the University of Oklahoma, and the University of South Carolina.

Research Experiences for Undergraduates: I continue to encourage and facilitate the active role of undergraduate students in research activities. These activities have been funded by a Research Experiences for Undergraduates (REU) supplements to NSF grants and an NSF International Research Experiences for Students (IRES) grant funding students to conduct research at laboratories in Thailand and Japan. Currently I an NSF REU Site award to continue these efforts and establish collaborations and support students to conduct research at the Korea Advanced Institute of Science and Technology (KAIST).

Structures Laboratory Research in Resilient Infrastructure: I have built research facilities at the University of Connecticut to carry out experimental research in smart structures including a medium-scale seismic simulator, a 2 kip real-time hybrid testing facility, a fully monitored scaled highway bridge and an operational traffic light signal structure. This equipment, along with bench-scale laboratory equipment used for education, utilizes the Network for Earthquake Engineering Simulation (NEES) cyberinfrastructure tools for teleparticipation and teleoperation. In addition to research demonstrating structural control and bridge monitoring concepts in the laboratory, a systems-based approach to real-time hybrid simulation has been explored that provides for a more direct balance between performance and stability and will allow for potential geographically-distributed real-time hybrid simulation.

Field Research in Resilient Infrastructure: Current field tests I am leading include upgrading data acquisition hardware as well as bridge monitoring and remote monitoring software on six permanently monitored highway bridges in Connecticut. These new bridge monitoring systems utilize state-of-the-art data acquisition hardware from National Instruments, remote monitoring software developed for NEES, and a variety of sensors including solar powered wireless sensors from MicroStrain.

E. Collaborators and Other Affiliations

S.J. Dyke Washington University in St. Louis, St. Louis, MO - Collaborator

B.F. Spencer, Jr. University of Illinois, Urbana-Champaign, IL - Thesis Advisor

Have advised 8 M.S. students (Andrew Emmons - Martin/Martin Consulting Engineers , Wesley Reynolds - Wiss, Janney, Elstner Associates, Inc., Brent Bass - Simpson Gumpertz & Heger, Leah Loebach - Burns & McDonnell, Zhaoshuo Jiang – PhD, Harinee Trivedi – Burns & McDonnell, Adam Scianna – PhD, Christopher Wall – not employed; Dominick Mantoni – Electric Boat, Eric Lovejoy – MS, Susan Bakulski – MS, Shelley Plude – MS, Stephen Pruczyk – MS, Gannon Stromquist - MS), five PhD students (Yi Zhong Lin – U.S. Army, Zhaoshuo Jiang – PhD, Adam Scianna – PhD, Harinee Trivedi – PhD, Rui Botehello – PhD) and one postdoctoral scholar (Sung Jig Kim); total number of graduate students advised (past and present) 15 M.S. & 5 Ph.D. students; 1 postdoctoral scholar.