

DISTINGUISHED SEMINAR SERIES

Hosted by the Department of Civil and Environmental Engineering
at Northeastern University

Context Driven Analytics and AI for Infrastructure and Facility Management



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12PM - 1PM EST

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ABSTRACT: Engineers and managers involved in facility/infrastructure operations need situational awareness and assessment about as-is conditions when making daily decisions and developing short- and long-term plans. Yet, currently situational awareness of engineers is often challenged due to lack of useful and actionable information that are relevant to specific facilities and infrastructure systems in their purview. Advances in sensing and reality capture technologies, such as 3D imaging either on stationary platforms or on drones and in-situ sensing, streamline capturing of data depicting as-is conditions. Data collected from these technologies, integrated with building information models, enable context-driven analyses of as-is conditions, generation of actionable information related to specific facilities/infrastructure systems, and development of algorithms that help support proactive and predictive operations. This presentation will provide an overview of opportunities and research approaches associated with integration of sensor data with building/infrastructure information models and with development of context-driven algorithms. It will demonstrate applications of these approaches through specific deployments done in several facilities and other infrastructure systems, and highlight specific research projects being conducted at Carnegie Mellon University with a vision towards self-aware autonomous facilities and infrastructure systems.

BIO: Dr. Burcu Akinci is the Paul Christiano Professor of Civil & Environmental Engineering and Associate Dean for Research at the College of Engineering at Carnegie Mellon University. She was co-director of Smart Infrastructure Institute which conducts research on data-driven awareness about infrastructure systems, advanced information models and visualization approaches, and proactive decision support. Dr. Akinci's research interests include modeling and reasoning about information rich histories of buildings and infrastructure systems to streamline construction and infrastructure operations and management. She specifically focuses on investigating utilization and integration of building information models with data capture technologies, such as 3D imaging and embedded sensors, to capture semantically-rich as-built histories of construction projects and infrastructure operations and to support proactive and predictive operations and management. Dr. Akinci is the recipient of the ASCE Computing in Civil Engineering award in 2020, Professor of the year award in 2011 from the ASCE Pittsburgh section, the CETI Outstanding Early Career Researcher award from FIATECH in 2008 and ASCE Walter L. Huber Civil Engineering Research Prize in 2007. She co-founded and is the Chief Innovation Officer at LeanFM Technologies, which won 2017 Pittsburgh Business Times Innovation Award.