CASE WESTERN RESERVE UNIVERSITY

CIVIL AND ENVIRONMENTAL ENGINEERING DEPARTMENT SEMINAR

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Date: Thursday, September 26th, 2024
Time: 4:00pm – 5:00pm EST
Location: Nord, Room 356
Zoom link here

Intelligent Design and Construction for Building Structures and Infrastructure

Abstract: The complex interactions between the natural environment and humans have depleted natural resources, degraded the environment, and changed the climate. To address these challenges, professionals in architecture, engineering, and construction (AEC) need to create a safe, durable, and elegant structure or infrastructure, disciplined by conservation of materials and costs. AEC professionals make decisions, employing mathematical theories tempered with empirical evidence and using engineering judgment to deal with uncertainties. Recent advancements in artificial intelligence (AI) and emerging technologies have inspired designers and engineers to explore how these technologies augment their capacities in decision making and evaluate AI applications and impacts on the AEC industry. These technologies will significantly change future professional practices. The seminar presents several innovative uses of sustainable materials in creative structural design and novel computational construction, demonstrating intelligent design and construction principles. It also discusses how emerging technologies can accelerate the learning from nature to identify the physical laws for resilient systems built with sustainable materials and efficient construction methods.

Bio: Dr. Rui Liu specializes in sustainable materials, innovative structural design, and novel computational construction. He is an active member of the International Association for Shell and Spatial Structures (IASS), and chairs ASCE's Aesthetics in Design and Forensic Engineering education committees. Dr. Liu serves as an associate editor of the ASCE *Journal of Performance of Constructed Facilities*. He has co-edited four ASCE-published books. His work has been funded by public and private agencies and recognized by IASS and ASCE for design and leadership.