The Department of Civil and Environmental Engineering at the University of Houston presents...

CIVE 6111 Graduate Seminar

Disaster Resilience Community-level Simulation Models to Enable Decision Making

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Friday, September 17, 2021
2:45pm-3:45pm
Classroom Business Building (CBB) - Room 104
Zoom Link https://uh-edu-cougarnet.zoom.us/j/92095890647

Abstract
Frequency of natural hazards is increasing in the United States and around the world where communities are suffering from direct economic impacts as well as long periods of recovery. To address those consequences, community-level resilience studies are needed to evaluate the post-disaster recovery of various systems within a community as well as evaluate pre- and post-disaster mitigation policies. This presentation will focus on various levels of recovery models (including business, residential building stock, household level housing and school models) that are seamlessly integrated into a comprehensive agent-based model (ABM) which models a community as a system of interdependent systems. The ABM model is applied to the virtual community of Centerville subjected to tornado loads in order to evaluate the resilience of the education system for.

Keywords: Community resilience, Agent-based modeling, disaster recovery

Bio
Dr. Koliou is an Assistant Professor at the Zachry Department of Civil and Environment Engineering at Texas A&M University. She joined the department after having been a Postdoctoral Fellow at the NIST-funded Center of Excellence for Risk-based Community Resilience Planning at Colorado State University. She received her Diploma (2008) in Civil Engineering from the University of Patras, Greece, while she holds Master's (2010) and PhD (2014) degrees from the University at Buffalo. Her research interests span the fields of structural dynamics, earthquake engineering, and multi-hazard performance-based design for system functionality and community resilience. She has a diverse research portfolio with projects on the performance and functional recovery of wood and cross-laminated timber (CLT) structures as well as moldable and wave tunable materials for application in complex freeform structures. She is a member of the American Society of Civil Engineers (ASCE) technical committees including the Structural Engineering Institute (SEI) Design of Wood Structures Committee, the SEI Disaster Resilience of Structures, Infrastructure & Communities Committee and the Engineering Mechanics Institute Objective Resilience Committee. She also served as the co-chair of the Earthquake Engineering Research Institute's Younger Members committee during 2017-2019. Dr. Koliou received the 2018 Structural Engineering Institute's Young Professional Scholarship. She is also an ASCE ExCEEd fellow since summer 2019.