ASSESSMENT OF INTERDEPENDENCY (INOPERABILITY) FOR BUILDING MANAGEMENT

Understanding the diverse building assets requires in-depth knowledge of relationships among systems, subsystems, and their components. This research proposes a standardized data-driven approach with a systematic framework to identify the interrelationships of building components within subsystems. Additionally, this research develops a component inoperability prioritization tool, which is expected to help facility managers prioritize maintenance efforts based on interdependencies among the components and inoperability. The objectives of this study are (1) to provide subsystem inoperability assessment in the unplanned maintenance activities, (2) to perform the centrality assessment in the component risk assessment, and (3) provide component prioritization criteria derived from the decision-making algorithm based on the inoperability and component risk assessment analysis. The inoperability prioritization criteria will enable the facilities management to prioritize maintenance efforts based on data-driven risk assessment, increase component durability, enhance cost effectiveness by avoiding expensive emergency repairs, and improve overall building performance.

DR SOOJIN YOON

OKLAHOMA STATE UNIVERSITY (OSU)

After completing a Ph.D. program and a post-doctoral fellowship at Purdue University, Dr. Yoon joined the faculty at Oklahoma State University (OSU) in 2020. With ten years of working experience in transportation, specifically in highway and pavement structure analysis in South Korea, she has a comprehensive understanding of the entire process, from pavement materials and design to construction, and management of physical infrastructure. Dr. Yoon participated in several research projects including Indiana Department of Transportation (DOT) and Oklahoma DOT and National Science Foundation project (NSF), and Federal Highway Administration (FHWA) projects. Her recent research areas at OSU include disaster risk reduction, facility informatics, and sustainable design in the built environment.

Dr. Yoon was selected as the best coach in JUMP into STEM, funded by DOE, as her graduate students, who participated in the competition, secured the first-place position in 2022. Additionally, she coached undergraduate students who competed in the ASC/TEXO Region 5 Student Competition, winning first place in 2022 and second place in 2023. Dr. Yoon is an active member of the American Society of Civil Engineers and Leadership in Educational Facilities. Additionally, she is a president at the Asian American Faculty Staff Association at OSU.

APRIL 5, 2024

STEW G52

11:30 AM – 12:20 PM

International Council for Research and Innovation in Building and Construction

PURDUE UNIVERSITY | Division of Construction Engineering and Management