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香港大學建造及基建創新研究中心
CENTRE FOR INNOVATION IN CONSTRUCTION AND
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Department of Civil Engineering, CICID and MiCLab, HKU

Automated Infrastructure Inspection and Management Using UAV, AI and Digital Technologies

Dr Yang Zou

Senior Lecturer, Department of Civil and Environmental Engineering, University of Auckland, New Zealand

Date: January 13, 2025 (Monday)

Time: 11:30 a.m. – 12:30 p.m.

Venue: Room 612B, 6/F Haking Wong Building, The University of Hong Kong

Abstract

Rapidly capturing and quantifying the extent and severity of damage on infrastructure facilities like bridges could help engineers accurately understand the facility's serviceability and safety, and make corresponding repair and retrofit plans. Among all infrastructure inspection methods, visual inspection is the most common technique; however, it is often a manual, risky and labour-intensive undertaking that might involve the use of, for example, cameras to record data and bridge inspection vehicles to access hard-to-access areas. Moreover, such an approach may disrupt the traffic and pose safety concerns to the inspectors. It might not be suitable for emergency inspection in the aftermath of a major earthquake or other disasters, which requires complete rapid screening of all critical infrastructure facilities in the disaster area within hours or several days to support further search and rescue. In recent years, robotic and intelligent technologies have been growingly used for infrastructure inspection, which is a safer, more efficient and accessible method. This seminar will firstly provide an overview of infrastructure inspection and management, and then introduce Yang's recent and ongoing research efforts focused on developing a rapid, automated and data-driven approach for infrastructure inspection and management through combining the use of Unmanned Aerial Vehicle (UAV), Artificial Intelligence (AI), Building Information Modelling (BIM) and Virtual Reality (VR).

About the Speaker

Dr Yang ZOU is a Senior Lecturer (Above the Bar) in the Department of Civil and Environmental Engineering at the University of Auckland and Director of the Smart Digital Lab. His research lies in the inter-disciplinary area of intelligent infrastructure and digital construction. To date, Yang has secured >NZ\$19 million research funding as PI/Co-PI/Co-I from New Zealand and international funding agencies. He has also published >80 papers in leading journals and international conferences, which have received >1,900 citations according to Google Scholar.

- ALL ARE WELCOME -