



香港大學

THE UNIVERSITY OF HONG KONG



香港大學建造及基建創新研究中心  
CENTRE FOR INNOVATION IN CONSTRUCTION AND  
INFRASTRUCTURE DEVELOPMENT



MiCLab  
The University of Hong Kong

Department of Civil Engineering  
The University of Hong Kong

Centre for Innovation in Construction  
and Infrastructure Development

Modular Integrated Construction  
Laboratory

## SEMINAR

Jointly organized by  
**Department of Civil Engineering, CICID and MiCLab, HKU**

### **Intelligent Generation of Subway Construction Risk Response Measures Driven by Knowledge and Deep Learning**

**Prof Hong Zhou**

Professor, School of Architecture and Civil Engineering, Xiamen University, China

Date: August 20, 2024 (Tuesday)

Time: 11:00 a.m. – 12:00 n.n.

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

#### **Abstract**

Throughout the research on construction risk management, studies on risk decision-making are relatively deficient, especially on intelligent decision-making. Although data-driven Natural Language Processing (NLP) methods have greatly improved efficiency, the deep semantics cannot be understood due to the lack of knowledge. This seminar aims to change the route from data-driven to data- and knowledge-driven, and tries to generate construction risk response measures by using the method of knowledge embedding deep learning model, i.e. Knowledge-enabled Bidirectional Encoder Representation from Transformers (K-BERT). Furthermore, for image data such as monitor eagle eye, cross-modal fusion techniques are realized to generate construction response measures from construction images by Convolutional Neural Network (CNN), Long Short-Term Memory (LSTM) model, and the attention mechanism.

#### **About the Speaker**

Dr. Hong Zhou is a Professor and doctoral supervisor at the School of Architecture and Civil Engineering at Xiamen University. She obtained her doctorate from Southeast University. After finishing her doctorate, she is a Postdoctoral at Georgia Institute of Technology and a Visiting scholar at Purdue University. Her research fields are in BIM, smart construction, and sustainability construction. Recently she has focused on NLP and smart decision, machine vision, and data fusion, especially these new information technology applications in tunnel construction risk management. She hosts three National Natural Science Foundation of China (NSFC) projects and other lever projects; and won four provincial science and technology awards.

- ALL ARE WELCOME -