

Webinar Talk on "Adaptive Updating of Soil Properties Through Monitoring Data for Improved Prediction of Excavation Response"

BEM Approved CPD/PDP: xx Ref. No.: xx.



by **Dr Andy Leung**
PE, PhD

WEDNESDAY, 7 APRIL 2021
5 PM - 7PM

Registration Fees
(effective 1st August 2020)
IEM Members : RM 15.00
IEM Non Members : RM 70.00

Register online | www.myiem.org.my

SYNOPSIS

This presentation introduces an adaptive model updating approach for deep excavations, which considers various sources of uncertainty that lead to discrepancies between predicted and actual excavation responses. The approach utilizes field monitoring data, e.g. inclinometer measurements, to update the model bias and spatial variability features in soil stiffness and strength parameters. Based on the updated parameters, subsequent predictions on excavation responses and levels of uncertainty can be continuously refined as the construction progresses. To reduce the computational demands associated with the algorithm, the approach incorporates machine learning techniques including surrogate modelling and Bayesian methods. These are illustrated through two cases, where the approach provides an efficient modelling tool to facilitate data-driven decision making.

SPEAKER'S BIODATA

Dr. Andy Leung is currently Associate Professor at The Hong Kong Polytechnic University (PolyU). He graduated from The University of Hong Kong (BEng) in 2004 and University of California, Berkeley (MS) in 2005, before he obtained PhD degree at the University of Cambridge, UK. Before joining PolyU, Dr Leung has practised geotechnical engineering both in Hong Kong and the United States and had been involved in a number of large-scale civil engineering projects in Hong Kong, the United States, United Kingdom, India and the Middle East. He is a registered Professional Engineer in the State of California, US. His research interests include soil-structure interaction, reliability of geotechnical and structural systems and probabilistic analysis approaches. He has received awards including the HKIE Fugro Prize, Departmental Teaching Excellence Award, Dean's Award for Outstanding Achievement in Research Funding, etc. Currently, he serves on the Geotechnical Division Committee of the Hong Kong Institution of Engineers, and as the Secretary-General of Hong Kong Geotechnical Society.