

Practice of Optimisation Theory in Geotechnical Engineering

Webinar

Dr Zhen-Yu Yin

Department of Civil and Environmental Engineering, The Hong Kong Polytechnic University

Date & Time: 21st March 2022 (Mon), GMT+8 (HKT) 6:30pm

ABSTRACT

The HKIE Geotechnical Division and Hong Kong Geotechnical Society are co-organizing a series of webinars delivered by local academics on the latest research in geotechnical engineering. Two webinars will be delivered in March 2022 by professors of The Hong Kong Polytechnic University, and more will follow in the coming months.

In recent decades, various advanced constitutive models for soils have sprung up. The identification of parameters and selection of constitutive models have become one of the hotspots and difficulties in geotechnical engineering, even the engineers are at a loss. Therefore, the purpose of this presentation is to deal with how to intelligently identify models and their parameters, and how to apply them to engineering practice. To this end, the presentation first systematically introduces the basic principles and application fields of various optimization algorithms, and then presents how to improve the performance of optimization-based parameter identification taking the genetic algorithm and differential evolution algorithm as examples. Several typical geotechnical problems are selected to illustrate the practice of optimization theory, such as: (1) the development of empirical correlations for key mechanical parameters of soils; (2) the parameter identification of soils for a given constitutive model; (3) selection of constitutive models for given experimental data; (4) constitutive model selecting and updating during an excavation project.

THE SPEAKER

Dr. Zhen-Yu YIN is Associate Professor of Geotechnical Engineering at The Hong Kong Polytechnic University since 2018. Dr. Yin received his BEng in Civil Engineering from Zhejiang University in 1997, followed by five years engineering consultancy at the Zhejiang Jiahua Architecture Design Institute. Then, he obtained his MSc and PhD in Geotechnical Engineering at Ecole Centrale de Nantes (France) in 2003 and 2006 respectively. He was associate professor at Ecole Centrale de Nantes (France) before moving to Hong Kong. Dr. Yin has published over 220 articles in peer reviewed international journals with an H index of 44 according to Web of Science. He is Associate Committee Member of Granular Materials Committee of American Society of Civil Engineers; Associate Editor of "European Journal of Environmental and Civil Engineering" and "Geotechnique Letters"; and Editorial Board Members of some top journals in the field of soil mechanics and geotechnical engineering (Canadian Geotechnical Journal, International Journal of Geomechanics ASCE, Soils and Foundations, Acta Geotechnica, Transportation Geotechnics, etc.)..

Registration & Enquiries:

This Lecture is free of charge. Please register online via the website at <https://hkieged.org/public/events/JH7iEyKzqHBPdQymR1LM>. Successful applicants will be noticed individually. For enquiries, please contact Dr Andy Leung at andy.yf.leung@polyu.edu.hk.