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Jointly organised between Geotechnical
Engineering Technical Division (GETD) and
Tunneling and Underground Space
Engineering Technical Division (TUSTD)

WEBINAR TALK ON GEOPHYSICAL METHODS IN GEOTECHNICAL ENGINEERING APPLICATIONS: TUNNEL LOOK-AHEAD AND DEEP SOIL MIXING



Speaker:
Dr. Darren SC Chian



4PM - 6PM



29 OCT 2024, TUESDAY

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Registration Fees

Student Members : Free

IEM Members : RM 15.00

IEM Non Members : RM 70.00

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SYNOPSIS

Fusion of geophysical methods in geotechnical engineering applications can offer complementary information on the mechanical properties of the ground. In this webinar, geophysical methods involving seismic waves would be presented in two geotechnical engineering applications, namely, tunnel look-ahead and deep soil mixing. Tunnelling in complex geology and congested underground spaces in urban settings pose challenges for tunnel boring machines (TBMs) to operate efficiently and safely. Without the need for cutterhead access or through-lining drilling, geophysical seismic wave methods can travel and propagate through the ground to detect anomalies ahead of the TBM face. Three case studies each presenting different geological complexities would be presented to validate the robustness of look-ahead estimates of subterranean obstacles and rock-soil interface well ahead of the tunnelling. In the case of deep soil mixing (DSM), evaluating spatial mechanical properties of cement improved soil presents inherent challenges, primarily due to limited access below ground. This webinar would present laboratory and field case studies on the use of quick and non-destructive seismic surface wave methods to estimate the development of unconfined compressive strength of cement stabilised soil over time, thereby offering enormous benefits of forecasting later-age strength of the improved ground, reducing the need for excessive coring of samples from the ground, as well as providing a three-dimensional evaluation of the extent of improved ground on site rather than spot measurements obtained from limited depth and location of the cored ground profile.



SPEAKER'S BIODATA

Dr. Darren SC Chian is the Director of the Centre for Soft Ground Engineering and an Associate Professor at the Department of Civil and Environmental Engineering, National University of Singapore (NUS). He obtained his Ph.D. and B.Eng. (1st Class with Gold Medal) from Cambridge University and Nanyang Technological University respectively. Dr. Chian is the Secretary of the ISSMGE TC217 Land Reclamation and Nominated Member of the TC203 Earthquake Geotechnical Engineering and TC104 Physical Modelling in Geotechnics. He is also the current President of the Geotechnical Society of Singapore and the Chair of the National Technical Committee of Civil and Geotechnical Works, overseeing building codes and practices in Singapore. Dr. Chian is recognised as Asia's Top 10 Innovators Under 35 by the MIT Technology Review and Singapore Accreditation Council (Distinguished) Award in 2016 and 2020 respectively. He was also awarded the top Minister's Innovation Award (Distinguished), Land Transport Excellence Award (Innovation), and Singapore's Prominent Geotechnical Engineer by the Geotechnical Society of Singapore in 2022.