The Institution of Engineers, Malaysia

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TECHNICAL TALK ON "UNDERGROUND TUNNELLING IN THE KLANG VALLEY AND PURSUIT OF AUTONOMOUS TUNNEL BORING MACHINES"

Organised by Tunnelling & Underground Space Technical Division, IEM

BEM Approved CPD/PDP Hours: 2 Ref No: IEM19/HQ/576/T

Date : 19th December 2019 (Thursday)
Time : 5.30 p.m. – 7.00 p.m. (Refreshments will be served at 5.00 p.m.)
Venue : Auditorium Malakoff, Ground Floor, Wisma IEM, Petaling Jaya
Speakers : Ir. Nanthakumar Sivagurunathan, Mr. Justin Chin and Mr. John Lim Ji Xiong

SYNOPSIS

The talk begins with an introduction of the Klang Valley Mass Rapid Transit Project (KVMRT) Sungai-Buloh Serdang Putrajaya Line Underground Works Package, and some design considerations in the project.

On tunnelling operations, key tunnelling challenges for the construction of the underground sections of Kuala Lumpur's metro lines are discussed with particular focus on the innovations of the Variable Density TBM and an Autonomous TBM system. The Autonomous TBM system has given TBMs unprecedented capabilities to drive themselves with minimal human input and was developed by a local team on the Klang Valley MRT Line 2 project. The Autonomous TBM (A-TBM) system is a "plug-and-play" solution comprising custom Artificial Intelligence algorithms installed on industrial PC modules on the TBMs. The A-TBM system delivers superior performance via faster response times, unbiased decision making and improved accuracy compared to human operators, resulting in safer operations and a higher quality product for the Client. The system has successfully completed over 5km of tunnelling to date in a variety of challenging ground conditions and will be used to complete the remaining tunnel drives on the Klang Valley MRT Line 2 project.

ANNOUNCEMENT TO NOTE

EFFECTIVE 1st OCTOBER 2017

FEES FOR TALKS

Members

Registration Fee
Free of Charge (FOC)

Administrative Fee
Online - RM15.00
Walk In - RM20.00

Non-Members

Registration Fee - RM50.00
Administrative Fee - RM20.00

Limited seats are available on a "first come first served" basis (maximum 100 participants).
To secure your seat, kindly register online at www.myiem.org.my

PERSONAL DATA PROTECTION ACT

I have read and understood IEM's Personal Data Protection Notice published on IEM's website at www.myiem.org.my and I agree to IEM's use and processing of my personal data.

"IEM reserves the right to alter or cancel the programme due to unforeseen circumstances at its discretion'. For intending participants who choose to 'walk in without prior registration', IEM SHALL NOT be responsible for any direct or consequential losses".

BIODATA OF SPEAKERS

Speaker 1:

Ir. Nanthakumar Sivagurunathan had obtained hi BEng (Civil) from National University of Singapore and his MSc (International Construction Management) from Nanyang Technological University, Singapore. He is a Civil Professional Engineer in Malaysia with 30 years of experience across Asia region. In the last 12 years he is in construction management in Asia and Mid-East region. He is currently the committee member of IEM Tunnelling and Underground Space Technical Division (TUSTD). Nanthakumar is currently a Technical Director in Transportation department in AECOM Malaysia. He is now the Deputy Project Manager for Lead Design Consultant for Klang Valley Mass Railway Transport Line 2 (KVMRT L2) managing seven (7 Detailed Design Consultants (DDC). He is also part of the Supervision Consultant team for KVMRT L2.

Speaker 2:

Mr. Justin Chin graduated with a master's degree in Civil & Environmental Engineering from Imperial College London. He has 8 years' experience in the field of mechanized tunnelling and is currently the Acting General Manager for tunnelling works on the KVMRT Line 2 Project in Kuala Lumpur managing the tunnelling operations for the 16 tunnel drives on the project. He has previously worked on KVMRT Line 1 and his experience includes mined tunnels and micro-tunnelling / pipe jacking. Justin also leads Gamuda's R&D initiatives for tunnelling including the development of the world's first Autonomous TBM.

Speaker 3:

Mr. John Lim Ji Xiong graduated with a M.Eng. Mechanical Engineering from the University of Bristol, with a strong research focus on machine learning. He has 2 years experience in the field of bored tunneling on the KVMRT Line 2 Project in Kuala Lumpur and is currently the R&D engineer leading the world's first Autonomous TBM efforts. Together with a multidisciplinary team, they develop control algorithms that interface with industrial hardware, obtain large amounts of data and make decisions to drive the machine. In 2019, he was a keynote speaker at the Python Malaysia Conference on the novel use of the Python programming language for machine control and also at the Taiwan Mobility Conference on advancements in Autonomous TBM technology.

Ir. Khoo Chee Min
Chairman, Tunneling & Underground Space Technical Division, IEM