

# PROGRAMME

# REGISTER NOW

## Geophysical Aspect of Smart Cities Workshop 10–12 December 2019 | Singapore

Icebreaker Reception  
Sponsor:

**HALLIBURTON**

One-Day Luncheon  
Sponsor:

**FUGRO**

### Tuesday, 10 December 2019

07:30 - 08:30	<b>Onsite Registration</b> Coffee, tea, juices and morning refreshments available <b>Hotel Safety Briefing</b> <b>Welcome Address by Committee Chair – Elita Li, National University of Singapore</b> <b>Opening Address by Biondo Biondi, Stanford University –</b> <b>Fiber-Based Seismology for Large-Scale Urban Subsurface Characterization and Monitoring Using Preexisting Telecommunication Infrastructure</b>
<b>SESSION 1</b>	<b>FIBER-BASED DISTRIBUTED ACOUSTIC SENSING I</b> Session Chairs: Elita Li & Biondo Biondi
09:25 - 09:50	<b>New Signals in Massive Data Acquired by Fiber Optic Seismic Monitoring Under Pennsylvania State University</b> Eileen Martin, Virginia Tech
09:50 - 10:15	<b>Ambient Acoustic Noise Recorded by Downhole and Telecom Fibre Optic Cables in an Urban Environment: Curtin University Campus Case Study</b> Boris Gurevich, Curtin University <b>Moderated Discussion – 10 min</b>
10:15 - 10:25	<b>Moderated Discussion – 10 min</b>
10:25 - 10:45	COFFEE BREAK – 20 min – Atrium Ballroom
10:45 - 11:25	<b>KEYNOTE: Geophysical Data Integration as a Scientific Problem Solving: How to Address Civil Engineering Needs</b> Giorgio Cassiani, University of Padua
<b>SESSION 2</b>	<b>GEOPHYSICAL APPLICATIONS: GROUND PENETRATING RADAR</b> Session Chairs: Jinhyun Choo & Giorgio Cassiani
11:25 - 11:50	<b>Improving Utility Mapping with 3D Real-Time GPR Data Processing</b> Paolo Mazzucchelli, Aresys
11:50 - 12:15	<b>Complex Trace Analysis to Numerical and Measured GPR Data</b> Huieun Yu, Sejong University
12:15 - 12:25	<b>Moderated Discussion – 10 min</b>
12:25 - 13:25	LUNCH – 1 hr – Kallang Room (Level 4)
13:25 - 14:05	<b>KEYNOTE: Uses of MASW for Smart City Development – Case Histories at Fill Sites</b> Koya Suto, Terra Australis Geophysica
<b>SESSION 3</b>	<b>INTEGRATION OF GEOPHYSICS AND CIVIL ENGINEERING: CASE STUDIES I</b> Session Chairs: Koichi Hayashi & Koya Suto
14:05 - 14:30	<b>Microgravity Surveys for Solving Geoenvironmental Problems in Cities</b> Jan Mrlina, Institute of Geophysics CAS
14:30 - 14:55	<b>Digital Rock Physics: Probing Fluid Percolation and Mechanical Instability in Geomaterials</b> Teng-fong Wong, Chinese University of Hong Kong
14:55 - 15:20	<b>Integration of Geophysical Imaging and Geomechanical Modeling for Urban Geotechnics: Roads Ahead</b> Jinhyun Choo, The University of Hong Kong <b>Moderated Discussion – 10 min</b>
15:20 - 15:30	<b>Moderated Discussion – 10 min</b>
15:30 - 15:50	COFFEE BREAK – 20 min – Atrium Ballroom
15:50 - 16:30	<b>KEYNOTE: Usage of Seismic Prediction Systems on Tunnel Boring Machines (TBM) for Detection of Obstacles within the Tunnel Alignment</b> Ruben Duhme, Herrenknecht Asia
<b>SESSION 4</b>	<b>GEOPHYSICAL APPLICATIONS: ELECTRICAL METHODS</b> Session Chairs: Darren Chian & Ruben Duhme
16:30 - 16:55	<b>Imaging Ahead of Tunnel Boring Machines with Electrical Resistivity</b> Mike Mooney, Colorado School of Mines
16:55 - 17:20	<b>Pitfalls and Countermeasures in Cross-Hole Electrical Resistivity Tomography</b> Chih-Ping Lin, National Chiao Tung University
17:20 - 17:45	<b>Cross-Borehole Geophysical Tomography to Identify Underground Karst in Engineering Scale: Case Studies in China</b> Huaifeng Sun, Shandong University <b>Moderated Discussion – 10 min</b>
17:45 - 17:55	<b>Moderated Discussion – 10 min</b>
18:30 - 20:30	ICEBREAKER RECEPTION – Changi Room 1 & 2 – Sponsored by Halliburton

### Wednesday, 11 December 2019

08:30 - 09:10	<b>KEYNOTE: Estimating 3D S-Wave Velocity Structures from Seismic Ambient Noise Based on a Common Midpoint Spatial Autocorrelation Method</b> Koichi Hayashi, OYO Corporation
<b>SESSION 5</b>	<b>GEOPHYSICAL APPLICATIONS: AMBIENT SEISMIC IMAGING</b> Session Chairs: Koya Suto & Koichi Hayashi
09:10 - 09:35	<b>Seis-ing up Singapore – Insights into Singapore's Subsurface Structure from a Seismic Nodal Array</b> Karen Lythgoe, Nanyang Technological University
09:35 - 10:00	<b>Deep Bedrock Detection Based on Seismic Interferometry Using Ambient Noise in Singapore</b> Enhedelilai Nilot, National University of Singapore
10:00 - 10:25	<b>Seismic Method Combined with Logging Data for Urban Underground Investigation in Hangzhou, China</b> Gang Tian, Zhejiang University
10:25 - 10:35	<b>Moderated Discussion – 10 min</b>
10:35 - 10:55	COFFEE BREAK – 20 min – Atrium Ballroom
10:55 - 11:35	<b>KEYNOTE: Web-based 3D Geological Model for Singapore and its Applications</b> Jian Chu, Nanyang Technological University
<b>SESSION 6</b>	<b>FIBER-BASED DISTRIBUTED ACOUSTIC SENSING II</b> Session Chairs: Taeseo Ku & Eileen Martin
11:35 - 12:00	<b>DAS Deployment on Existing Fibre Infrastructure at NUS</b> Elita Li, National University of Singapore
12:00 - 12:25	<b>Backscattering Enhanced Optical Fiber (BEOF) Based Ultra-High Sensitive DAS and its Applications in Smart City</b> Qizhen Sun, Huazhong University of Science and Technology
12:25 - 12:50	<b>Ultra-high Strain Resolution DAS System and its Applications</b> Gang Yu, BGP
12:50 - 13:00	<b>Moderated Discussion – 10 min</b>
13:00 - 14:00	LUNCH – 1 hr – Kallang Room (Level 4)
<b>SESSION 7</b>	<b>POSTER SESSION</b>
14:00 - 15:30	<b>A Study on Monitoring Ground Subsidence Near Construction Excavation Area Based on ERT Methods</b> Ahyun Cho, Sejong University
	<b>Local Site Effect Estimation Using Horizontal to Vertical Spectral Ratio of Microtremor Data (Case Study: Kradinan, East Java, Indonesia)</b> Bramantya Ramadhany, Sepuluh Nopember Institute of Technology
	<b>Urban Geohazard Assessment and Risk Management Utilizing Ongoing Digital Revolution</b> Jitesh Kumar Nembhni, Rajiv Gandhi Institute of Petroleum and Technology
	<b>Application of Geophysical Methods for Building Smart Cities – A Case Study in India</b> Promod Kumar Painuly, University of Petroleum and Energy Studies
	<b>Regional Hydro-Geophysical Study of the Groundwater Potentials of Imo River Basin Southeastern Nigeria Using Surficial Resistivity Data</b> Terhemba Emberga, Federal Polytechnic Nekede
	<b>P-Wave Separation for Three-Component VSP Data by Generative Adversarial Network</b> Yanwen Wei, Tsinghua University
	<b>Near-Surface Monitoring in Urban Environments Based on Extremely Short Period of DAS Recordings</b> Yumin Zhao, National University of Singapore
15:30 - 15:50	COFFEE BREAK – 20 min – Atrium Ballroom
15:50 - 16:30	<b>KEYNOTE: Role of Geophysical Investigations in Mapping the Holocene and Anthropocene for Underground Construction</b> Goh Kok Hun, Land Transport Authority (LTA)
<b>SESSION 8</b>	<b>INTEGRATION OF GEOPHYSICS AND CIVIL ENGINEERING: CASE STUDIES II</b> Session Chairs: Paolo Mazzucchelli & Goh Kok Hun
16:30 - 16:55	<b>Monitoring of Displacements on Buildings and Structures Using InSAR Data: Towards a New Standard Tool for Monitoring Urban Areas</b> Alessandro Ferretti, Tre Altamira
16:55 - 17:20	<b>Quantitative Integration of Geophysical and Geotechnical Data for Characterization of Near Seafloor Sediments</b> Yi Shen, Shell
17:20 - 17:45	<b>Discussion of HVSR Processing and Applications in Singapore</b> Taeseo Ku, National University of Singapore
17:45 - 17:55	<b>Moderated Discussion – 10 min</b>

### Thursday, 12 December 2019

08:30 - 09:10	<b>KEYNOTE: Planning for a Future-Ready City of Tomorrow</b> Kwet Yew Yong, National University of Singapore
<b>SESSION 9</b>	<b>INTEGRATION OF GEOPHYSICS AND CIVIL ENGINEERING: CASE STUDIES III</b> Session Chairs: Charles Im & Kwet Yew Yong
09:10 - 09:35	<b>Application of Geophysics in Underground Construction – a Layman's Perspective</b> Yingxin Zhou, Defence Science and Technology Agency (DSTA)
09:35 - 10:00	<b>Practical Case Studies of Geophysical Technique Application in Hong Kong and the UK</b> Mark Wallace, Arup HK
10:00 - 10:25	<b>Passive Seismic Method for Grand Paris Projects</b> Clément Mogenier, Sixence
10:25 - 10:35	<b>Moderated Discussion – 10 min</b>
10:35 - 10:55	COFFEE BREAK – 20 min – Atrium Ballroom
10:55 - 11:35	<b>KEYNOTE: Urban Geophysics in Managing Subsurface Risk</b> Carlton Hall, Fugro
<b>SESSION 10</b>	<b>GEOPHYSICAL APPLICATIONS IN URBAN TRAFFIC SYSTEMS</b> Session Chairs: Chih-Ping Lin & Carlton Hall
11:35 - 12:00	<b>Transforming Fibre Optic Cables into Geophysical Sensors Providing Traffic Management and Infrastructure Monitoring in Smart Cities</b> Steve Cole, Optasense
12:00 - 12:25	<b>Audio for Autonomous Driving: The Car that Hears</b> Ohad Barak, Siemens
12:25 - 12:50	<b>Seismic Traffic Monitoring with Distributed Acoustic Sensing</b> Gang Fang, National University of Singapore
12:50 - 13:00	<b>Moderated Discussion – 10 min</b>
13:00 - 14:00	LUNCH – 1 hr – Kallang Room (Level 4)
14:00 - 14:40	<b>KEYNOTE: Evolution of Geohazard Monitoring in an Urban Environment – Thoughts, Comments and Pitfalls Drawn from Case Histories</b> Sergei Terzaghi, Arup USA
<b>SESSION 11</b>	<b>MACHINE LEARNING APPLICATIONS IN GEOPHYSICS AND CIVIL ENGINEERING</b> Session Chairs: Joongmoo Byun & Sergei Terzaghi
14:40 - 15:05	<b>The Role of Machine Learning in Geophysical Data Processing: A Practitioner Point of View</b> Paolo Mazzucchelli, Aresys
15:05 - 15:30	<b>A Data-Driven Framework for Regional Structural Seismic Fragility Assessment</b> James Long, Massachusetts Institute of Technology (MIT)
15:30 - 15:55	<b>Application of Machine Learning in Geotechnical Engineering: A Case Study on Cement Stabilized Soil</b> Darren Chian, National University of Singapore
15:55 - 16:05	<b>Moderated Discussion – 10 min</b>
16:05 - 16:25	COFFEE BREAK – 20 min – Atrium Ballroom
<b>SESSION 12</b>	<b>PANEL DISCUSSION: BRIDGING THE GAP BETWEEN GEOPHYSICS AND CIVIL ENGINEERING</b> Panel Discussion Moderator: Arthur Cheng
16:25 - 16:35	Biondo Biondi, Stanford University
16:35 - 16:45	Kwet Yew Yong, National University of Singapore
16:45 - 16:55	Carlton Hall, Fugro
16:55 - 17:05	Ruben Duhme, Herrenknecht Asia Ltd
17:05 - 17:15	Sergei Terzaghi, Arup USA
17:15 - 17:55	<b>Moderated Panel Discussion – 40 min</b>
17:55 - 18:15	<b>Wrap-Up – 20 min</b>