

Technical Program

Time in Seoul (GMT +9)	September 28 (Tue)	Time in Seoul (GMT +9)	September 29 (Wed)
09:30-10:00	Opening Ceremony (30') - UNIST Vice President - Prof. Chung-Bang Yun - Symposium Chair	09:20-09:30	Technical Announcements
10:00-10:35	Keynote Lecture 1 (35') - Prof. Mark Butala (ZJU-UIUC Institute)	09:30-10:10	Panel Discussion Session for future collaborations
10:35-10:50	Break	10:10-12:00	Session 5 & Session 6 (110')^{a)}
10:50-12:40	Session 1 & Session 2 (110')^{a)}	12:00-12:10	Break
12:40-13:40	Lunch	12:10-13:00	Special Seminar (50') - Prof. Hyun Myung, Dept. of Electrical Eng., KAIST
13:40-14:50	Keynote Lectures 2 & 3 (70') - Prof. Chi Sun Poon (Hong Kong PolyU) - Prof. Kohei Nagai (U. of Tokyo)	13:00-14:00	Lunch
14:50-15:00	Break	14:00-15:10	Keynote Lectures 4 & 5 (70') - Prof. Yuanfeng Duan (Zhejiang U.) - Prof. Gi-Hyong Cho (UNIST)
15:00-16:50	Session 3 & Session 4 (110' & 84')^{a) & b)}	15:10-15:20	Break
16:50-17:30	Introduction to UNIST & UEE Online Technical Tour	15:20-17:10	Session 7 & Session 8 (110' & 84')^{a) & b)}
		17:10-17:40	Closing Ceremony

a) 12 mins x 8 presentations + 14 mins. for Q & A = total 110 mins.

b) 12 mins x 6 presentations + 12 mins. for Q & A = total 84 mins.

U of Tokyo & UNIST: GMT +9

Zhejiang U & Hong Kong PolyU: GMT +8

U of Illinois: GMT -5

Introduction to UNIST & UEE

Ulsan National Institute of Science and Technology (UNIST) is a warm and welcoming university located in the heart of South Korea's largest industrial city, Ulsan. Since its opening in 2009, UNIST has made remarkable progress in science and technology. Moreover, the Department of Urban and Environmental Engineering (UEE), which is the host of this symposium, is one of leading departments at UNIST. In this session, UNIST and UEE with their various achievements will be introduced.

Online Technical Tour

The online technical tour will demonstrate the latest technology in cable-stayed bridge design and construction. The tour will feature the Godeok Bridge, which is a high-strength concrete (80 MPa) cable-stayed structure crossing the Han River in Seoul with a main-span length of 540 m. The superstructure is currently under construction.



Technical Program

Day 1: September 28 (Tuesday)

09:30 – 10:00 Opening Ceremony		
10:00 – 10:35	<p>Keynote Lecture 1 Chair Prof. Billie F. Spencer Jr. (U. of Illinois)</p> <p>Title Construction of a Living, Integrated Cybermodel of Complex Urban Environments Presenter Prof. Mark Butala (ZJU-UIUC Institute)</p>	
	10:35 – 10:50 Break	
10:50 – 12:40	<p>Session #1: Structural Health Monitoring I (Chair: Prof. Young Joo Lee, Prof. Sung-Han Sim)</p>	<p>Session #2: Structural Health Monitoring II (Chair: Prof. Gun Kim, Prof. Yi-Qing Ni)</p>
	<p>10:50 – 11:02 (S1-1) Title Train-induced Vibration of Hangers for a Tied-arch Bridge Based on VFIFE Authors Sikai Wu (P); Yuanfeng Duan; Chung-Bang Yun; JongDar Yau</p>	<p>(S2-1) Title Comparison of Topology Optimization Methods Including Self-Weight Authors Sebastian Pozo (P); Thomas Golecki</p>
<p>11:02 – 11:14 (S1-2) Title Probabilistic Assessment of Fatigue Life of Welds in Hydraulic Steel Structures Authors Travis Fillmore (P)</p>	<p>(S2-2) Title Intelligent Delivery of Modular Healthcare Facilities Based on Robotic Technologies Authors Yifan Gao (P); Jiangpeng Shu</p>	
<p>11:14 – 11:26 (S1-3) Title Tracking Missing Thin Crack Segments During Deep Learning-based Crack and Non-crack Classification Authors G. Kolappan Geetha; Sung-Han Sim (P)</p>	<p>(S2-3) Title Development of a Strain Sensor for a Next Generation Wireless Sensing Platform Authors Omobolaji Lawal (P); Amirali Najafi</p>	
<p>11:26 – 11:38 (S1-4) Title Automated Damage Detection Using a Fusion of Thermal and RGB Images Authors Quincy Alexander (P)</p>	<p>(S2-4) Title Anomaly Detection Based on Mixture of Probabilistic Principal Component Analysis for Structures under Multiple Operational Conditions Authors Zhi Ma (P); Yaozhi Luo; Chung-Bang Yun</p>	
<p>11:38 – 11:50 (S1-5) Title Re-weighted Adversarial Domain Adaptation for Structural Damage Identification Authors Xiaoyou Wang (P); Yong Xia</p>	<p>(S2-5) Title Filtered White Noise Stochastic Moving Load Model Authors Thomas Golecki (P); Fernando Gomez</p>	
<p>11:50 – 12:02 (S1-6) Title Guided Wave Based Local Damage Detection for Multi-wire Steel Cable Authors Xiaodong Sui (P); Yuanfeng Duan; Chung-Bang Yun; Zhifeng Tang</p>	<p>(S2-6) Title A Hybrid Sequential Sampling Strategy for Sparse Polynomial Chaos Expansion Based on Compressive Sampling and Bayesian Experimental Design Authors Bei-Yang Zhang (P); Yi-Qing Ni</p>	
<p>12:02 – 12:14 (S1-7) Title Intelligent Multiple Damage Detection of Maglev Rail Joints Authors Su-Mei Wang (P); Gao-Feng Jiang; Yi-Qing Ni</p>	<p>(S2-7) Title An Automated Inspection Approach for Precast Concrete Components Based on 3D Point Cloud Authors Yu Jiang (P); Weijian Zhao</p>	
<p>12:14 – 12:26 (S1-8) Title Damage Detection of Concrete Infrastructures Based on UAV and Computer Vision Authors Wei Ding (P); Jiangpeng Shu; Wenkai Xiao; Xiaowu Zhang; Haoyu Zhang</p>	<p>(S2-8) Title Structural Health Monitoring Connecting EMI Sensor Network with GCN Authors Lu Zhou (P)</p>	
12:26 – 12:40	Q&A	Q&A
12:40 – 13:40 Lunch		

Technical Program

Day 1: September 28 (Tuesday)

13:40 – 14:15	Keynote Lecture 2 Chair Prof. Songye Zhu (Hong Kong PolyU)
	Title Novel Accelerated Carbonation Technologies for Total Recycling of Concrete Wastes Presenter Prof. Chi Sun Poon (Hong Kong PolyU)
14:15 – 14:50	Keynote Lecture 3 Chair Prof. Tomonori Nagayama (U. of Tokyo)
	Title Mesoscale Simulation of Corroded R/C Members Using a Discrete Analysis Model Presenter Prof. Kohei Nagai (U. of Tokyo)

14:50 – 15:00 Break

15:00 – 16:50	Session #3: Urban Planning and Disaster Management (Chair: Prof. Ji-Bum Chung, Prof. You Dong)	Session #4: Sustainable Construction Materials I (Chair: Prof. Gun Kim, Prof. Yuya Takahashi)
15:00 – 15:12	(S3-1) Title Pedestrians' Safety Perception and Crossing Behaviors in Narrow Urban Streets: an Experimental Study Using Immersive Virtual Reality Technology Authors Jae-Hong Kwon (P); Gi-Hyoung Cho	(S4-1) Title High Strength, Deformability and Anti-permeability of Cementitious Materials Enabled by In-situ Polymerization Authors Chengji Xu (P); Qiang Zeng
15:12 – 15:24	(S3-2) Title Automatic Top-view Transformation and Image Stitching of In-vehicle Smartphone Camera Images for Road Condition Evaluation Authors Jose Maria Geda (P); Kai Xue; Tomonori Nagayama	(S4-2) Title A Model Proposal for Compressive Behavior of Concrete Affected by Delayed Ettringite Formation Authors Chirayu Kothari (P); Yuya Takahashi
15:24 – 15:36	(S3-3) Title Child Accidents after School Time: Focusing on Non-home Based Trip Authors Jihun Oh (P); Jeongseob Kim	(S4-3) Title Fiber Orientation and Pore Structure Variation of 3D Printed Fiber Reinforced Cementitious Composites Authors Rijiao Yang (P); Zhendi Wang; Yu Peng; Qiang Zeng
15:36 – 15:48	(S3-4) Title Data Augmentation Strategies for Road Anomaly Detection of In-vehicle Smartphone Record Images Authors Kai Xue (P); Tomonori Nagayama; Di Su	(S4-4) Title Experimental Study on the Sound Absorption Performance of Surface-perforated Mortar Authors Sungwoo Park (P); Kebede Alemayehu Moges; Sukhoon Pyo
15:48 – 16:00	(S3-5) Title How Does the 2017 Pohang Earthquake Affect Local Commercial Industries? Authors Jungseok Seo (P); Jeongseob Kim	(S4-5) Title Evaluation of Concrete Compressive Strength Development Considering Multiple Factors Authors Bochao Sun (P); Weijian Zhao
16:00 – 16:12	(S3-6) Title Estimation of Wheelbase, Sensor Position and Driving Speed through Vehicle Vibration Analysis for Road Condition Evaluation Authors Yuki Kakiuchi (P); Tomonori Nagayama; Kai Xue	(S4-6) Title Durability Enhancement of Cement Mortars with Recycled Plastics Using Ethylene-vinyl Acetate and Nanosilica Authors Ahmed Al-Mansour (P); Qiang Zeng
16:12 – 16:24	(S3-7) Title Evaluating the Use of WiFi Data For Understanding Pedestrian Behavior in Urban Public Space Authors Juhyeon Park (P); Jeongseob Kim	Q&A
16:24 – 16:36	(S3-8) Title Life-cycle Management Considering Correlation Authors Yaohan Li (P); You Dong	-
16:36 – 16:50	Q&A	-

16:50 – 17:30 Introduction to UNIST & UEE, Online Technical Tour

Technical Program

Day 2: September 29 (Wednesday)

09:20 – 09:30 [Technical Announcement](#)

09:30 – 10:10 [Panel Discussion](#)

10:10 – 12:00 Session #5: Structural Health Monitoring III (Chair: Prof. Sung-Han Sim, Prof. Tomonori Nagayama)		10:10 – 12:00 Session #6: Earthquake and Geotechnical Engineering (Chair: Prof. Byungmin Kim, Prof. Di Su)	
10:10 – 10:22	(S5-1) Title Wireless Vision-based Synchronized Displacement Monitoring Authors Shaik Althaf V (P); Shajihan; Tu Hoang	10:10 – 10:22	(S6-1) Title Building and Ground Damage Caused by the 2017 M5.4 Pohang Earthquake Authors Byungmin Kim (P)
10:22 – 10:34	(S5-2) Title Physics-based Graphics Model as an Enabler for Computer Vision-driven Structural Health Monitoring Authors Shuo Wang (P); Guanghao Zhai; Casey Rodgers	10:22 – 10:34	(S6-2) Title Effect of Variations in Foundation Soil Parameters on the Seismic Response of a Cable-Stayed Bridge Authors Hafiz Ahmed Waqas (P); Di Su
10:34 – 10:46	(S5-3) Title Experimental Study on a Particle Damper for High-frequency Vibration Mitigation Authors Xin Ye(P); Yi-Qing Ni	10:34 – 10:46	(S6-3) Title Post-Earthquake Building Performance Assessment Using BIM and UAVs Authors Nathan Levine (P)
10:46 – 10:58	(S5-4) Title The Dalles: Vision-based Displacement Estimation of Large-Scale Infrastructures – a Case Study Authors Casey Rodgers (P); Brian Welsh; Shuo Wang	10:46 – 10:58	(S6-4) Title Evolution of Change in Stiffness of Different Gap-graded Soil Compositions Subjected to Internal Erosion Authors Ali Naqi (P); Kenji Watanabe
10:58 – 11:10	(S5-5) Title Field Test to Detect Unsupported Sleepers by Vehicular Responses Authors Toshiyuki Nakamura (P); Di Su	10:58 – 11:10	(S6-5) Title Rapid Post-earthquake Safety Assessment System of Buildings Using Measured Accelerations Authors Koji Tsuchimoto (P); Yasutaka Narazaki
11:10 – 11:22	(S5-6) Title Study on the Aerodynamic Characteristics of Double-unit Trains with Different Types Authors Zheng-Wei Chen (P); Yi-Qing Ni	11:10 – 11:22	(S6-6) Title Ground Motion Prediction Model for South Korea using Gradient Boost Authors Jisong Kim (P); Hwanwoo Seo; Byungmin Kim
11:22 – 11:34	(S5-7) Title Monitoring-based MBS-FEM Analysis Scheme for Wind-vehicle-bridge Interaction System and Experimental Validation Authors Qi Hu (P); Di Su	11:22 – 11:34	(S6-7) Title Displacement Estimation of a Nonlinear SDOF System under Seismic Excitation Using Kalman Filter and Parameter Optimization Authors Yaohua Yang (P); Tomonori Nagayama
11:34 – 11:46	(S5-8) Title Novel Self-powered Active Isolation: Case Study on a Single-degree-of-freedom System Authors Jin-Yang Li (P); Songye Zhu	11:34 – 11:46	(S6-8) Title Effect of Soil-tunnel Flexibility Ratio on the Damage Quantification of Rectangular Tunnels Authors Yudnina Hanifah (P); Myoungsu Shin
11:46 – 12:00	Q&A	11:46 – 12:00	Q&A

12:00 – 12:10 **Break**

[Special Seminar](#)

Chair Prof. Myoungsu Shin (UNIST)

12:10 – 13:00

Title Robot Navigation Technologies for Smart Cities

Presenter Prof. Hyun Myung, Department of Electrical Engineering, KAIST, South Korea

13:00 – 14:00 **Lunch**

Technical Program

Day 2: September 29 (Wednesday)

14:00 – 14:35	Keynote Lecture 4	
	Chair Prof. Sung-Han Sim (Sungkyunkwan U.) Title EME Absolute Stress Sensor for Steel Cables and Prestress Tendons: R & D, Engineering Application, and Product Standard Presenter Prof. Yuanfeng Duan (Zhejiang U.)	
14:35 – 15:10	Keynote Lecture 5	
	Chair Prof. Young Joo Lee (UNIST) Title Data Driven Nudge for the Smart City Presenter Prof. Gi-Hyoug Cho (UNIST)	
15:10 – 15:20 Break		
15:20 – 17:10	Session #7: Resilient Structural Systems (Chair: Prof. Myoungsu Shin, Prof. Weijian Zhao)	Session #8: Sustainable Construction Materials II (Chair: Prof. Sukhoon Pyo, Prof. Kohei Nagai)
15:20 – 15:32	(S7-1) Title Direct Strength Method for Web Crippling Design of Lean Duplex Stainless Steel Tubular Sections Authors Yancheng Cai (P); Ben Young	(S8-1) Title Structural Behavior of Concrete-filled Hollow Steel Tube Joints with Group of Modified Holo-bolts Authors Partha P Debnath (P); Tak-Ming Chan
15:32 – 15:44	(S7-2) Title Design Method of Fabric Formed Concrete Beams Reinforced with W-FRP Authors Yuanzhang Yang (P); Weijian Zhao	(S8-2) Title Directly Observing the Interaction between Rebar and Concrete after Corrosion Using Digital Image Correlation Authors Kumar Avadh (P); Kohei Nagai
15:44 – 15:56	(S7-3) Title Nonlinear Adaptive Genetic Algorithm for Parameter Identification of Bouc-Wen Model for RC Shear Walls Authors Fan Hu (P); Hongmei Zhang; Yuanfeng Duan	(S8-3) Title A Framework for the Design Optimization of Metal 3D Printed Tubular Structures Authors Jun Ye (P)
15:56 – 16:08	(S7-4) Title Development of Extreme Gradient Boosting Model for Predicting Seismic Demands of Steel Moment Frames Authors Hoang D. Nguyen (P); Myoungsu Shin	(S8-4) Title The Role of Ultrasound in Early-stage Material Characterization and Structural Health Management Authors Gun Kim (P)
16:08 – 16:20	(S7-5) Title Time-history Deflection Prediction Using Gaussian Process Regression for Railway Bridges Authors Jaebeom Lee (P); Seunghoo Jeong; Junhwa Lee; Sung-Han Sim; Kyoung-Chan Lee; Young-Joo Lee	(S8-5) Title Visualization of Mercury Percolation in Porous Hardened Cement Authors Yuxuan Qi (P); Qiang Zeng
16:20 – 16:32	(S7-6) Title Integration of Physics-based Model and Measurement Data for Probabilistic Condition Monitoring of Bridges Authors Seungjun Lee (P); Jaebeom Lee; Young-Joo Lee	(S8-6) Title Nexus between Piezoresistivity and Surface Fractal Dimensions of Cement-based Composites with Graphene Nanoplatelets Authors Nanxi Dang (P); Qiang Zeng
16:32 – 16:44	(S7-7) Title Surrogate-assisted Efficient Multi-criteria Global Sensitivity Analysis of Structural Systems Authors Jing Qian (P); You Dong	Q&A
16:44 – 16:56	(S7-8) Title Seismic Resilience Estimation of Water Transmission Networks by Considering Flow-based Network Analysis Authors Sungsik Yoon (P); Young-Joo Lee; Hyung-Jo Jung	-
16:56 – 17:10	Q&A	-
17:10 – 17:40 Closing Ceremony		