

6.2. Schedule in detail

Wednesday, 10 July, 2024

09:00-09:30 **Registration**
09:30-10:00 **Opening Speech**

Keynote lecture A & Keynote lecture B @ Lecture Room 1, 5F Chair: Prof. Chul-Woo Kim (Kyoto University)

10:00-10:30 Prof. Billie. F. Spencer Jr. (University of Illinois Urbana-Champaign)
Topology Optimization of Structures Subjected to Random Dynamic Loads

10:30-11:00 Dr. Masatsugu Shinohara (Hanshin Expressway)
Design of four-tower continuous cable-stayed bridge in Kobe

PS1-SHM1 @ Hall

Theme: Structural Health Monitoring

Chair: Assoc. Prof. Fernano Moreu (University of New Mexico)

11:30-11:50 Yuqi WU, Wensong ZHOU (Harbin Institute of Technology)
Investigations on Energy-transfer Characteristics of Guided Wave in Helical Steel Wires

11:50-12:10 Karma Cheki, Ji DANG (Saitama University)
Prototype Application: Portable and Integrating Bridge Inspection & Maintenance System

12:10-12:30 Nguyen Huu Bao Ngan, Kee Seong-Hoon (Dong-A university)
Surface-Mounted EIS Sensor Development for Corrosion Monitoring in Reinforced Concrete

12:30-12:50 Joshua Irawan, Chul-Woo Kim, Kai-Chun Chang (Kyoto University)
Feasibility Investigation of the Rotation Angle-based Virtual Axle Concept of Bridge Weigh-in-Motion for Bridge Health Monitoring

12:50-13:10 Shanghong Chen, Wei Lin, Hongjie Wang, Xin Lin and Jintu Huang (Fuzhou University)
Detection technique of grouting sleeve for Lamb wave time reversal

PS1-VDF1 @Meeting Room 2

Theme: Vision & Data Fusion

Chair: Prof. Chia-Ming Chang (National Taiwan University)

11:30-11:50 Junrui Ren, Xian Xu, Yaozhi Luo (Zhejiang University)
Research on Vision-based Intelligent Detection Method for Bending Rods of Existing Large-Span Structures

11:50-12:10 Yuxuan Li, Yasutaka Narazaki (Zhejiang University)
Multimodal Remote Sensing Image Registration Based on Adaptive PIIFD

12:10-12:30 Dymock Dibb, Ben Burton, Nick Birbilis (Australian National University)
Interdisciplinary Solutions for Deploying Infrastructure Inspection Computer Vision Systems

12:30-12:50 Chia-Ming Chang, Chin-Jou Liao (National Taiwan University)
Implementation of Indoor Inspection for Buildings Using Defect Detection and Augmented Reality

12:50-13:10 Krishna Modak, Kai Xue, Di Su (The University of Tokyo)
Observed Changes in Pavement Surfaces Based on Smartphone Images Over Three Years

PS1-AML @ Meeting Room 3**Theme: Application of Machine Learning****Chair: Assoc. Prof. Ji Dang (Saitama University)**

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|-------------|---|
| 11:30-11:50 | Sanjeev Bhatta, Ji Dang (Saitama University)
<i>Rapid Safety Assessment of RC Buildings Using Hybrid Quantum Machine Learning</i> |
| 11:50-12:10 | Lama Hajmoussa, Ji DANG (Saitama University)
<i>Automatic Post-earthquakes RC Building Damage Assessment Using Machine Learning</i> |
| 12:10-12:30 | Xiaoyou WANG, Yong XIA (The Hong Kong Polytechnic University)
<i>Machine learning-based structural damage detection considering the impact of climate change</i> |
| 12:30-12:50 | Miao XU, Limin SUN (Tongji University)
<i>A bridge temperature field reconstruction method fused with sparse sensors data and structured grid-based deep learning approach</i> |
| 12:50-13:10 | Qiuhan Meng, Songye Zhu (The Hong Kong Polytechnic University)
<i>Unsupervised Learning Enabled Construction Vibration Anomalous Signal Detection</i> |

PS2-SHM2 @ Hall**Theme: Structural Health Monitoring****Chair: Assist. Prof. Yuguang Fu (Nanyang Technological University)**

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|-------------|---|
| 14:00-14:20 | Wei Shen, Shuaiwen Cui, Yuguang Fu (Nanyang Technological University)
<i>Edge intelligence for smart IoT-based structural health monitoring system</i> |
| 14:20-14:40 | Luyang Zhang, Limin Sun (Tongji University)
<i>A Rapid Information Acquisition Method for Bridge Inspection Reports by Using Large Language Model</i> |
| 14:40-15:00 | Zhihao WANG, Chul-Woo KIM (Kyoto University)
<i>Probabilistic Damage Severity Estimation of Stay Cables in a Cable-stayed Bridge Using Ambient Vibration Data</i> |
| 15:00-15:20 | Xiaolong Liao, Qixiang Yan, Chuan Zhang, Yunhui Qiu (Southwest Jiaotong University)
<i>Deep learning-based intelligent evaluation of freeze-thaw damage in tunnel lining using PZT-induced stress wave</i> |
| 15:20-15:40 | J. Prawin (CSIR-Structural Engineering Research Centre)
<i>Drive-by bridge health monitoring using double pass technique and wavelet analysis</i> |

PS2-VDF2 @ Meeting Room 2**Theme: Vision & Data Fusion****Chair: Assist. Prof. Yasutaka Narazaki (Zhejiang University)**

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| 14:00-14:20 | Fernando Moreu, Kaveh Malek (University of New Mexico)
<i>Human-Machine Interfaces and Control for Additive Manufacturing</i> |
| 14:20-14:40 | Mingyu Shi, Hyunjun Kim, Yasutaka Narazaki (Zhejiang University)
<i>3D visual recognition of bridge components using synthetic point cloud dataset</i> |
| 14:40-15:00 | Gwon, Gi-Hun, Kim, In-Ho, Jung, Hyung-Jo (Korea Advanced Institute of Science and Technology)
<i>Data Generation for Structural Damage Augmentation Using a Paired Image-to-Image Translation Model</i> |
| 15:00-15:20 | Yongchao Yang, Shanwu Li (Eastern Institute of Technology)
<i>Super-sensitivity Photogrammetry for Full-field Measurement of Structural Dynamics</i> |
| 15:20-15:40 | Ying Lei, Fubo Zhang, Lijun Liu (Xiamen University)
<i>Real-time estimation of bridge displacements under vehicle loads using attention-based LSTM network with partial strain measurements</i> |

PS2-SI1 @ Meeting Room 3**Theme: System Identification****Chair: Assoc. Prof. Di Su (The University of Tokyo)**

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| 14:00-14:20 | Jose Maria G. Geda, Yaohua Yang, Masaru Kitahara, Tomonori Nagayama (The University of Tokyo)
<i>Efficient Post-earthquake Displacement Estimation using Augmented Extended Kalman Filter for a Three-Span Highway Bridge Model</i> |
| 14:20-14:40 | Binbin Li (Zhejiang University)
<i>Gaussian Process-based High-Resolution Structural Mode Shape Identification</i> |
| 14:40-15:00 | Tomoya Ueda, Keita Uemura, Yoshikazu Takahashi (Kyoto University)
<i>Current Delay Compensation Method in Real-Time Hybrid Simulation for E-Isolation</i> |
| 15:00-15:20 | Zhen Sun (Southeast University)
<i>Typhoon-induced acceleration prediction of the main girder in cable-stayed bridges with surrogate models</i> |
| 15:20-15:40 | Takehiko Asai, Kentaro Komori (University of Tsukuba)
<i>Experimental verification of an inertial mass electromagnetic transducer with mechanical motion rectifier</i> |

PS3-MU @ Hall**Theme: Model updating****Chair: Dr. Dan Li (Southeast University)**

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| 16:00-16:20 | Wei Tian, Yong Xia (The Hong Kong Polytechnic University)
<i>Model updating of nonlinear structures using sub structuring method</i> |
| 16:20-16:40 | LUO Lanxin, SONG Mingming, SUN Limin, XIA Yong (The Hong Kong Polytechnic University)
<i>Hierarchical Bayesian Model Updating of Bridge Structures Considering Operational Loads: A Case Study</i> |
| 16:40-17:00 | Debao Chen, Chul-Woo Kim (Kyoto University)
<i>Bayesian Probabilistic Framework with Nonlinear FE Models for Updating and Assessing Real-World Bridges</i> |
| 17:00-17:20 | Dan Li, Jiajun Zhou, Xinhao He (Southeast University)
<i>Derivative-free approach for time and frequency domain finite element model updating</i> |

PS3-SI2 @ Meeting Room 3**Theme: System Identification****Chair: Dr. Xuzhao Lu (Tongji University)**

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| 16:00-16:20 | Ryoma Nakajima, Di Su, Kai Xue, Tomonori Nagayama (The University of Tokyo)
<i>Contact Force Estimation in Light-Duty Trucks by Onboard Vibration Measurement</i> |
| 16:20-16:40 | J. Chen, H. Xu, Y.B. Yang (Chongqing University)
<i>Normalized formula for removing damping effect in recovering bridge mode shapes</i> |
| 16:40-17:00 | Ao WANG, Tomonori NAGAYAMA (The University of Tokyo)
<i>Drive-by estimation for bridge maximum deflection using contact point profiles reconstructed by heavy moving vehicle</i> |
| 17:00-17:20 | Xuzhao Lu, Chul-Woo Kim, Kai-Chun Chang, Tomonori Nagayama, Limin Sun (Tongji University)
<i>Identification of Bridge Parameters using Convolution Network with Multiple Vehicles</i> |

Thursday, 11 July, 2024

Keynote lecture C & Keynote lecture D @ Lecture Room 1, 5F

Chair: Prof. Akira Igarashi (Kyoto University)

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| 9:00-9:30 | Prof. Tomonori Nagayama (The University of Tokyo)
<i>Advanced Infrastructure Monitoring: Leveraging Simulation, IoT, and Machine Learning Toward Resilient Society</i> |
| 9:30-10:00 | Prof. Hui Li (Harbin Institute of Technology)
<i>Intelligent computing for science and engineering</i> |

PS4-SHM3 @ Hall

Theme: Structural Health Monitoring

Chair: Prof. Hyung-Jo Jung (Korea Advanced Institute of Science and Technology)

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| 10:30-10:50 | Muhamad Fauzi Darmawan, Akhmad Aminullah, Christopher Triyoso, Irawan Eko Prabowo, Guntara Muria Adityawarman (Universitas Gadjah Mada)
<i>Web-based Real Time Long-term Structural Health Monitoring for Various Type of Bridge Structures in Indonesia</i> |
| 10:50-11:10 | Osama ABBAS, Ji DANG (Saitama University)
<i>Integrating Practical Information with Image Captioning Using Long Language Models for Post Earthquake Structural Safety Evaluation</i> |
| 11:10-11:30 | Daigo Kawabe, Chul Woo Kim (Kyoto University)
<i>Scour depth estimation of a railway bridge pier by use of real-time ambient vibration monitoring</i> |
| 11:30-11:50 | Yuxuan Tian, Yuequan Bao (Harbin Institute of Technology)
<i>Fatigue damage assessment method for bridge based on graph neural networks</i> |
| 11:50-12:10 | Tomonori Nagayama, Philip Markert, Yaofua Yang, Makoto Suzuki (The University of Tokyo)
<i>Natural frequency estimation for scouring assessment through ambient vibration analysis using the Random Decrement technique</i> |

PS4-DD1 @ Meeting Room 2

Theme: Damage Detection

Chair: Assoc. Prof. Chun-Hsing (Jun) Ho (University of Nebraska-Lincoln)

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| 10:30-10:50 | Y Sea Tea, Jun Iyama, Wataru Sano, Seiya Kimura, Miwa Sadamoto, Junichiro Ono (The University of Tokyo)
<i>Time Domain Method and Frequency Domain Method on Damage Detection by Strain Vibration in Shaking Table Test of Steel Structure</i> |
| 10:50-11:10 | Zhao Chen, Nan Wang, Hao Sun (Southeast University)
<i>Graph Oscillators: Physics-guided Graph Modeling of Mass-Spring-Damper Systems for Trajectory Prediction and Damage Localization</i> |
| 11:10-11:30 | Chun-Hsing Ho, Kewei Ren, Dada Zhang (University of Nebraska-Lincoln)
<i>Development of Deep Learning Based Computing Algorithm in Support of Pavement Sensing Technology and Condition Assessment</i> |
| 11:30-11:50 | Rizky Pitajeng, Seong-Hoon Kee (Dong-A university)
<i>Early Corrosion Damage Classification in Reinforced Concrete Using AI-based model for Impact-Echo Signals</i> |
| 11:50-12:10 | Chuan Zhang, Yifeng Zhang, Zhengyu Xiong, Qixiang Yan (Southwest Jiaotong University)
<i>Smart Monitoring of Corrosion Damage of Shield Tunnel Lining Segment through PZT-based Active Sensing Aided with a Fused Deep Learning Network</i> |

PS4-SDC1 @Meeting Room 3**Theme: Structural Dynamics & Control****Chair: Prof. Kazuhiko Hiramoto (Niigata University)**

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| 10:30-10:50 | Kazuhiko Hiramoto, Tomohiro Watanabe (Niigata University)
<i>2-DOF Vibration Control of Structural Systems Using Feedforward Control Inputs Generated from Seismic Data at Remote Observation Sites</i> |
| 10:50-11:10 | Yi-ang ZHANG, Songye ZHU (The Hong Kong Polytechnic University)
<i>Learning Based Active Structural Vibration Control Strategies</i> |
| 11:10-11:30 | Jingoo Lee, Seungjun Lee, Young-Joo Lee (Ulsan National Institute of Science and Technology)
<i>Seismic response prediction of auxiliary building considering various structural properties and ground motions</i> |
| 11:30-11:50 | L.K. Shi, Y.B. Yang, H. Xu (Chongqing University)
<i>Torsional-flexural frequency variation in Vehicle-Bridge Interaction system</i> |
| 11:50-12:10 | Xiaoyue Wang, Zhe Qu (China Earthquake Administration)
<i>Challenges for Semi-Active Control in Enhancing the Seismic Reliability of Base-Isolated Buildings with Hydraulic Dampers</i> |

PS5-PIML @Hall**Theme: Physics Informed Machine Learning****Chair: Assist. Prof. Jiaji Wang (The University of Hong Kong)**

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| 13:00-13:20 | Weida Zhai, Yuequan Bao (Harbin Institute of Technology)
<i>Physics-informed Runge-Kutta Gated Recurrent Unit Networks for metamodeling of structural systems</i> |
| 13:20-13:40 | Jin Ho Hwang, Nur Indah Mukharromah, Hyun Woo Park Jin Ho Hwang, Nur Indah Mukharromah, Hyun Woo Park (Dong-A university)
<i>Physics-Informed Neural Network Approach for Predicting Early-age Prestress loss and Camber of a PSC beam</i> |
| 13:40-14:00 | Jinghao Fei, Shiuancheng Pai, Chul-Woo Kim (Kyoto University)
<i>MS-FNO for Damage Localization and Quantification on a Steel Truss Bridge</i> |
| 14:00-14:20 | Xiaoge Tian, Jiaji Wang (The University of Hong Kong)
<i>State-of-the-art Review of Artificial Intelligence for Structural Metamodeling</i> |

PS5-DD2 @ Meeting Room 2**Theme: Damage Detection****Chair: Assoc. Prof. Ye Xia (Tongji University)**

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| 13:00-13:20 | Regidestyoko Wasistha Harseno, Seong-Hoon Kee (Dong-A university)
<i>Rebar Interference Suppression in GPR Detection of Air-cavities Behind Reinforced Tunnel Linings</i> |
| 13:20-13:40 | Soyeon Park, Sunjoong Kim (University of Seoul)
<i>Enhanced Structural Damage Detection: Integrating Deep Support Vector Data Description with Convolutional Autoencoder</i> |
| 13:40-14:00 | Junwei Chen, Yuanfeng Duan, Xiaodong Sui, Chungbang Yun (Zhejiang University)
<i>Damage detection for a multi-wire cable structure based on guided waves using magnetostrictive transducer</i> |
| 14:00-14:20 | Xi Huang, Huang Huang, Mao Kurumatani, Zhishen Wu (Ibaraki University)
<i>Subsurface concrete damage detection using multifrequency acoustic hammer testing</i> |

PS5-SDC2 @ Meeting Room 3**Theme: Structural Dynamics & Control****Chair: Prof. Sunjoong Kim (University of Seoul)**

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| 13:00-13:20 | Hao Luo, Hongping Zhu, Shun Weng (Huazhong University of Science and Technology)
<i>Vibration control of a jacket offshore platform structure using a negative stiffness damping device</i> |
| 13:20-13:40 | Yuteng Cao, Zhe Qu (Xi'an University of Architecture and Technology)
<i>A substructural shake table testing method for full-scale nonstructural elements</i> |
| 13:40-14:00 | Cheng Xie, Yongtao Bai (Chongqing University)
<i>Efficient optimization method for energy absorption capacity of origami structures</i> |
| 14:00-14:20 | Sunho Lee, Sunjoong Kim (University of Seoul)
<i>Synthetic-Data-driven Early Warning System for Vortex-Induced Vibrations in Cable-Supported Bridges</i> |

PS6-SB @ Hall**Theme: Structural Behavior****Chair: Prof. Francisco Javier Suárez Medina (University of Granada)**

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| 14:40-15:00 | Chenxi Wei, Limin Sun, Ye Xia, Xuzhao Lu (Tongji University)
<i>Estimation for Bridge Displacement at Different Sections through Data Fusion with Artificial Neural Network</i> |
| 15:00-15:20 | Ying-Lei Li (The Hong Kong Polytechnic University)
<i>Anchorage behavior of stainless steel T-bolt in concrete-filled steel tube</i> |
| 15:20-15:40 | Francisco Javier Suárez Medina (University of Granada)
<i>ANALYSIS OF THE SEISMIC BEHAVIOR OF THE ALHAMBRA TOWERS (GRANADA, SPAIN) BASED ON INFORMATION COLLECTED FROM IN SITU TESTS</i> |
| 15:40-16:00 | Yong Xia, Yiming Zhang, Zifeng Huang, Xiaoqing Zhou (The Hong Kong Polytechnic University)
<i>Adaptive Multi-Taper S-transform Methods for Spectral Estimation of Stochastic Processes</i> |

PS6-SDC3 @ Meeting Room 3**Theme: Structural Dynamics & Control****Chair: Assist. Prof. Xinhao He (Tokoku University)**

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| 14:40-15:00 | Xinhao He, Dan Li, Yu Lin, Shigeki Unjoh (Tohoku University)
<i>Performance Evaluation of Seismic Isolation and Control Structures Via Minimal Sensor</i> |
| 15:00-15:20 | Scott Northedge (Texas U&M University)
<i>State Space Modeling for High-Volume Transportation Networks</i> |
| 15:20-15:40 | Y.H. Liu, Y.B. Yang, H. Xu (Chongqing University)
<i>Recovering vertical and radial mode shapes of curved bridges from multi contact responses of a single-axle scanning vehicle</i> |
| 15:40-16:00 | Sun, Zhi, Niu, Ya-Feng, Gong, Feng-Zong, Hu, Qi, Cao, Yang-Mei (Tongji University)
<i>Frequency Shift Sensing for Mode Fusion Monitoring in Vehicle-Bridge Interaction Process</i> |