

# **First International Conference on Maintenance and Rehabilitation of Constructed Infrastructure Facilities (MAIREINFRA1)**

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19-21 July 2017

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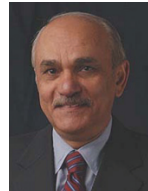
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**Main Feature Presentation:**

**JunHwan Chang, J.D., L.L.M., M.C.J.  
Chang, Cho & Associates**

**"Engineering meets Entertainment + Excitement"**

**iSMARTi Meeting (Open to all Registered Participants)**

## THURSDAY, July 20, 20017

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# FRIDAY, July 21, 2017

8:00 am – 9:00 am	Registration (breakfast on your own))
9:00 am – 10:30 am	<p>▶ <b>Session A.7 Asphalt Pavement Maintenance and Rehabilitation</b></p> <p><b>Session Chair: Saravut Jaritngam, Prince of Songkla University</b></p> <p><b>A.7.1 DETERIORATION COST DUE TO CAMBER FOR CHIPSEALED PAVEMENTS OVER GRANULAR BASES</b>, Jacobus Daniel van der Walt*, Eric Scheepbouwer, Bryan Pidwerbesky and Brian H.W. Guo, University of Canterbury (New Zealand) 498</p> <p><b>A.7.2 THE EFFECTS OF PART-TIME SHOULDER USE ON THE SERVICE LIFE OF THE MAINLINE TRAVEL LANES WITH FULL DEPTH PAVED SHOULDERS</b>, Sean Coffey, Seri Park* and Leslie Myers McCarthy, Villanova University (USA). 504</p> <p><b>A.7.3 CORRELATING PAVEMENT FRICTION WITH A NOVEL MACRO-TEXTURE INDICATOR DERIVED FROM HIGH SPEED THREE-DIMENSIONAL TECHNOLOGY</b>, Yichang (James) Tsai and Lauren Gardner, Georgia Tech (USA) 510</p> <p><b>A.7.4 DEVELOPMENT OF A SIMPLE ASPHALT OVERLAY PROGRAM CONSIDERING EXISTING PAVEMENT CONDITION, LIFE, AND DISTRESS IN SEOUL CITY</b>, Hyun Jong Lee, Wonjae Kim, Van Phuc Le, Julius Marvin Flores, Jongeun Baek and Taewoo Kim, Sejong University (Korea) 516</p>
Ballroom I	
Ballroom II	<p>▶ <b>Session B.7 Big Data and Information Analytics in Construction</b></p> <p><b>Session Chair: Junyong Ahn, Florida Institute of Technology (USA)</b></p> <p><b>B.7.1 INFORMATON DELIVERY WORKFLOWS THROUGHOUT THE LIFE-CYCLE OF TRANSPORTATION ASSETS</b>, Tuyen Le*, H. David Jeong, Chuck Jahren, Jennifer Shane, and Kristen Cetin, Iowa State University (USA) 522</p> <p><b>B.7.2 INTELLIGENT CONSTRUCTION SITES WITH DIGITAL STRATEGY</b>, Younghan Jung, Old Dominion University (USA) and <b>Junyong Ahn*</b>, Florida Institute of Technology (USA) 528</p> <p><b>B.7.3 DEVELOPING A FRAMEWORK FOR IDENTIFYING BRIDGE DAMAGE CAUSAL FACTORS AND DAMAGE PATTERNS BASED ON TEXT MINING</b>, Sehwan Chung, Soram Lim, Seokho Chi*, Bon-Gang (BG) Hwang, Seoul National University (KOREA) 534</p> <p><b>B.7.4 MACHINE-LEARNING FOR AUTOMATED IMPACT PREDICTIONS OF HIGHWAY CONSTRUCTION</b>, <b>Kunhee Choi</b>, and Junseo Bae, Texas A&amp;M University (USA) 540</p> <p><b>B.7.5 CRASH REPORT ANALYSIS USING TEXT MINIG FOR STRATEGIC FREEWAY SAFETY FACILITY MANAGEMENT</b>, <b>Taekhyung Kim</b>, Seoul National University (KOREA), Yoonjung Shin, Korean Reinsurance Company (KOREA), Seokho Chi*, and Dong-kyu Kim, Seoul National University (KOREA) 547</p>
Ballroom III	<p>▶ <b>Session C.7 Safety and Sustainability Improvements</b></p> <p><b>Session Chair: Athanasios Nikolaidis, Aristotle University of Thessaloniki (Greece)</b></p> <p><b>C.7.1 PARAMETRIC MODELING OF KOREAN CONSTRUCTION WORKERS FOR THE SAFER CONSTRUCTION ENVIRONMENT</b>, <b>Stephen Baek*</b>, Hosin "David" Lee, Rajan Bhatt, Kimberly Farrell, Jasbir S. Arora and Karim Abdel-Malek, University of Iowa (USA) 553</p> <p><b>C.7.2 EVALUATING INNOVATIVE PAVEMENT SUSTAINABILITY TOOLS</b>, Cristina Torres-Machi*, Jessica Achebe and <b>Susan L. Tighe</b>, University of Waterloo (Canada) 559</p> <p><b>C.7.3 TRUST SERVICE DESIGN FOR BUSINESS CONTINUITY PLANNING AND DISASTER RECOVERY</b>, Lee Won Park, Sangho Park, Onechul Na, Yanghoon Kim (Far East University) and <b>Hangbae Chang</b>, Chung-Ang University (KOREA) 565</p> <p><b>C.7.4 A MOBILE APPLICATION FOR MAINTENANCE MANAGEMENT</b>, <b>Haena Kim</b> University of Washington and Hosin "David" Lee, University of Iowa (USA) 571</p> <p><b>C.7.5 OPERATIONALIZING THE CONCEPT OF RESILIENCE: A CASE STUDY OF FLOODING IN NORTH CAROLINA</b>, Yuanchi Liu, Rachel Chiquoine, <b>Sue McNeil</b> and Earl Lee, University Delaware (USA) 577</p>
10:30 am - 10:45 am	Coffee Break (Exhibition Hall and Dongdaemun I)

10:45 am - 12:15 pm

Ballroom I

▶ **Session A.8 Pavement Management and Recycling**

**Session Chair: Hussain Bahia, University of Wisconsin (USA)**

**A.8.1 NEW PAVEMENT MANAGEMENT INFORMATION SYSTEM IMPLEMENTATION IN THE TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT), Jungyong "Joe" Kim\*, Jenny Li and Magdy Mikhail, Texas Department of Transportation (USA) 584**

**A.8.2 PAVEMENT MAINTENANCE MANAGEMENT SYSTEM FOR TIRUCHIRAPALLI CITY, Rejani V.U., Sunitha V.\* and Samson Mathew, NIT Tiruchirapalli (INDIA) 590**

**A.8.3 TEST METHOD FOR ACCURACY VERIFICATION OF LOW-SPEED PROFILERS IN CONSTRUCTION CONTROL OF PAVEMENT SURFACES, Kazuya Tomiyama\*, Akira Kawamura Masayuki Eguchi, Masaru Terada and Kazuhiro Watanabe, Kitami Institute of Technology (JAPAN) 596**

**A.8.4. ANALYSIS OF AGED ASPHALT BINDER REJUVENATED BY ADDITIVES USING FOURIER TRANSFORM INFRARED SPECTROSCOPY, Hosin "David" Lee and Ali Mokhtari, University of Iowa (USA) 602**

Ballroom II

▶ **Session B.8 Innovative Bridge and Roadway Construction Engineering and Management**

**Session Chair: Jeb S. Tingle, US Army ERDC (USA)**

**B.8.1 A CASE STUDY OF UTILIZATION OF KOREAN ULTRA HIGH PERFORMANCE CONCRETE IN ACCELERATED SHORT-SPAN BRIDGE CONSTRUCTION, Alex M. Davis, Buchanan County, Iowa (USA) 608**

**B.8.2 DEVELOPMENT OF A DIAGNOSTIC INDEX FOR CONCRETE BRIDGE DECKS WITH ASPHALT CONCRETE IN COLD AND SNOWY REGION, Jiyoung Rhee, Hongsam Kim, and Jaewon Shim (KOREA) 614**

**B.8.3 DURABILITY AND FATIGUE PERFORMANCE OF NEW PRECAST CONCRETE PAVEMENT SYSTEM, Okpin Na, Taesuk Seo, Junhyung Kim, Yunsoo Jung, and Hoonjae Choi (Korea) 620**

**B.8.4. COMPARISON OF CONSTRUCTION MANAGEMENT PRACTICES BY GOVERNMENTS IN USA AND KOREA, Junggon "Jerry" Kim, KETI, Jaeyong Cho, RICON and Hosin "David" Lee, University of Iowa (Korea & USA) 626**

Ballroom III

▶ **Session C.8. Disaster Information and Resilience**

**Session Chair: Susan L. Tighe, University of Waterloo (Canada)**

**C.8.1 SYSTEMATIC LITERATURE REVIEW ON CRITICAL INFRASTRUCTURE INTERDEPENDENCIES IMPACTED BY NATURAL DISASTERS, f Kang\*, Rana Khallaf and Makarand Hastak, Purdue University (USA) 632**

**C.8.2 DISASTER RISK ASSESSMENT OF EXTREME RAINFALL FLOOD AND SEA LEVEL RISE IMPACTS ON THE PORT CITY OF HAI PHONG IN VIETNAM, Quang Nguyen\* and Waheed Uddin, University of Mississippi (USA) 638**

**C.8.3 UNDERSTANDING DYNAMIC RISK PERCEPTION IN LARGE-SCALE INFRASTRUCTURE EVACUATIONS USING AN INTERACTIVE SIMULATION, Minji Choi, SangHyun Lee\*, Moonseo Park and Hyun-Soo Lee, Seoul National University (Korea) 644**

**C.8.4 INVESTIGATING THE ROLE OF EMERGENCY MANAGEMENT INFORMATION: THE CASE OF KOREA, Kyo-Man Ha\*, Jin-Kyu Park, Tae Hawn Kim and ChangYeol Lee, Pusan National University (Korea) 650**

**C.8.5 RESILIENCE ASSESSMENT FRAMEWORK FOR MUNICIPAL INFRASTRUCTURE, Ahmed Mohammed\*, Soliman A. Abu-Samra and Tarek Zayed, Concordia University (Canada) 656**

12:15 pm – 1:15 pm

Lunch (Ballroom I, II, III)

1:15 pm – 3:00 pm	<p>▶ <b>Workshop A.9 Pavement Design</b></p>
Ballroom I	<p><b>Session Chair: Han Yong Kim, Hansol Engineering (KOREA)</b></p> <p><b>A.9.1 OPENING REMARKS</b>, Ungin Na, Director of Airport Policy Division, Ministry of Land, Infrastructure and Transport. N/A</p> <p><b>A.9.2 LONG-TERM CONSTRUCTION PROJECT &amp; OPERATION OF INCHEON AIRPORT</b>, Young Ung Kim and Sung Han Cheon, Incheon International Airport Corporation (KOREA) N/A</p> <p><b>A.9.3 INNOVATIONS IN CANADIAN PAVEMENT ENGINEERING AND MANAGEMENT</b>, Susan Tighe, University of Waterloo (CANADA) N/A</p> <p><b>A.9.4 CONSTRUCTION OF MEASUREMENT SYSTEM FOR DEVELOPMENT OF KOREAN AIRPORT CONCRETE PAVEMENT DESIGN METHOD</b>, Nam Hyun Cho, Jin Hoon Jeong, Jong Hoon Lee and Hae Won Park, Inha University, Sung Han Cheon and Young-Ung Kim, Incheon International Airport Corporation (KOREA) 662</p>
Ballroom II	<p>▶ <b>Workshop B.9 International Cooperation in Advanced Construction Technology</b></p> <p><b>Session Chair: Hosin “David” Lee, Director of LACT, University of Iowa</b></p> <p><b>B.9.1 LEAD CAP WARM MIX ASPHALT ADDITIVE APPLIED IN STATES OF MINNESOTA, OHIO AND IOWA</b>, Cheol Min, Bak, KICT N/A</p> <p><b>B.9.2 ULTRA HIGH PERFORMANCE CONCRETE (UHPC)</b>, Changbin Joh, KICT N/A</p> <p><b>B.9.3 INCREMENT POST-TENSIONG CONCRETE (IPC) BRIDGE</b>, Manyop Han, Ajou University N/A</p>
Ballroom III	<p>▶ <b>Workshop C.9 Safety, Disaster Resilience and Sustainability</b></p> <p><b>Session Chair: Jae Hyeon Ryu, University of Idaho</b></p> <p><b>C.9.1 DISASTER RESILIENCE</b>, Sue McNeil, University of Delaware N/A</p> <p><b>C.9.2 Development of Drones for the Needs in the Disaster Area</b>, Howoong Shon, Technical Research Center, SQ Engineering N/A</p>
3:00 pm – 3:15 pm	<p>Coffee Break (Exhibition Hall &amp; Dongdaemun I)</p>

3:15 pm – 5:00 pm

Ballroom I

▶ **FAA Workshop A.10 FAA Airport Pavement Design Software (Bring your own laptop)**

**Session Chair: Benjamin Mahaffay, P.E., Airport Technology R&D Branch, William J. Hughes Technical Venter, Atlantic City International Airport, Federal Aviation Administration (USA)**

**A.10.1 Introducing FAARFIELD 1.41: Latest Updates to FAA Airport Pavement Design Procedures**

The US Federal Aviation Administration (FAA) released the latest update to its pavement design software, FAARFIELD 1.41, in November 2016. FAARFIELD implements a mechanistic-empirical approach to rigid and flexible pavement design, incorporating both layered elastic and 3D finite element structural models. The latest program includes many changes from the previous versions. While some of these changes are intended to improve the user experience or to add new functionality, others are more fundamental and affect the underlying structural, traffic and pavement life models. This workshop will familiarize participants with the latest FAA design procedures, with an emphasis on practical design examples. Because FAARFIELD was developed to support FAA standard pavement designs, a basic understanding of FAA material and construction standards is necessary for proper use of the program. Therefore, the properties of FAA standard materials including P-401 (hot-mix asphalt) and P-501 (portland cement concrete) will be examined in some detail. Other topics covered in this workshop will include: design life; cumulative damage factors (CDF) and pass/coverage ratio, subgrade and subbase layer characterization for design; using the FAARFIELD aircraft libraries; and interpreting the design report. The FAARFIELD methods of airport overlay design will be covered if time permits. N/A

Ballroom II

▶ **LACT Workshop B.10 International Cooperation in Advanced Construction Technology**

**Session Chair: Hosin “David” Lee, Laboratory for Advanced Construction Technology (LACT), U of Iowa**

**B.10.1 INTERNATIONAL COOPERATIONS, Panel Discussion by Representatives of all Industry Sponsors N/A**

**B.10.2. Korean American Society of Civil and Environmental Engineers (KSCEE) Meeting N/A**

Ballroom III

**Workshop C.10 Safety, Disaster Resilience and Sustainability N/A**

**Session Chair: Jun-Seok Oh, Western Michigan University**

Applications of Small Unmanned Aircraft System (sUAS) to Solve Real-World Problems  
Jae Hyeon Ryu, University of Idaho and Jun-Seok Oh, Western Michigan University (USA)

A small Unmanned Aircraft System (sUAS) is widely used to advance research on agriculture, environment, transportation and water resources. This research activity highlights how sUAS can be utilized to solve real-world applications, including but not limited to drought monitoring, infrastructure protection, safety surveillance, transportation, precision agriculture, and site-specific scouting. New federal regulation and guidelines are also discussed to promote applications of emerging technologies in the field. A preliminary research result from sUAS-based research activities will be shared with the MAIREINFRA community and potential collaborative research opportunities will be pursued. Lesson learned and future direction of sUAS technology will be also presented along with a couple of case studies as well as STEM activities. Any interested individual, private company, and civil engineers/researchers are welcome to attend by facilitating discussion for future sUAS research in civil and environmental engineering, in general.

5:00 pm – 6:00 pm

Exhibition Hall Closes

6:00 pm – 9:00 pm

Ballroom I, II, and III

**Closing Ceremony Dinner**

**Main Feature Presentation**

**Jeonghwan (Jerry) Choi, PhD, MBA, ME, Assistant Professor  
College of Business, Public Management, Kean University (Wenzhou Campus, China)**

**“Self-directed Behavior in Industry 4.0”**

**Closing Remarks by Kyong-Ku Yun, President, Korean Society of Road Engineers**

**Future Conferences by iSMARTi**

**2022 ICTI5, Lima, Peru**

**2021 MAIREINFRA2, TBD**

**2020 MAREPAV9, Switzerland**

**2019 MAIREBRIDGE1, Seoul, Korea**

**2018 ICTI4 July 9-10, Pretoria, South Africa**

**“Big Door Prize and Best Paper Awards- Must be Present to Win”**

