

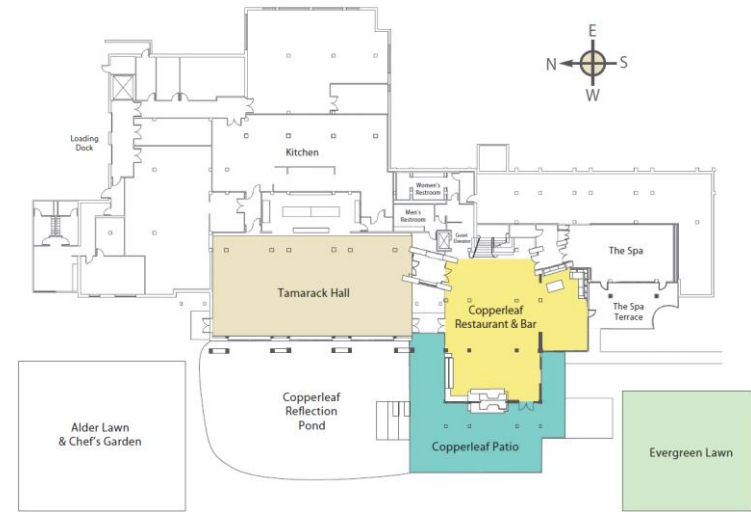
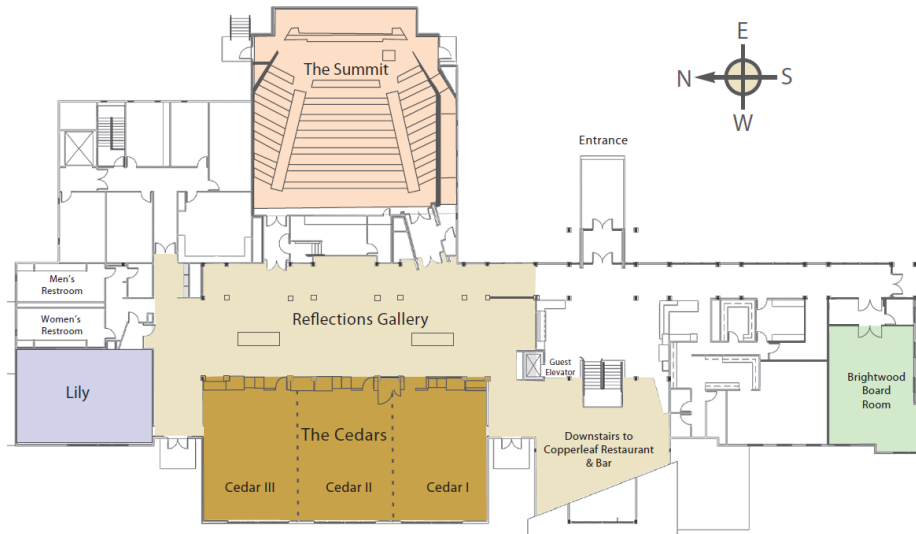


**2017 International Workshop on Computing in Civil Engineering
(IWCCE 2017)
June 25 – 27, 2017 @ Seattle, Washington**



(Program Last Updated 6/14/2017)

June 25, 2017 (Sunday)		
	Reflections Gallery	Brightwood Board Room
08:00 – 12:30		
12:30 – 13:00	Registrant Check-in Begins	
13:00 – 14:00		JCCE Editorial Board Meeting
14:00 – 14:45		
14:45 – 16:00		IACCS Meeting
16:00 – 17:00		Global Center Meeting
17:00 – 17:45	Poster Session Setup	
17:45 – 20:00	Poster Session and Welcome Reception	



June 26, 2017 (Monday)					
Tamarack Hall					
07:00 – 08:00	Breakfast				
The Cedars					
08:00 – 08:10	Opening Remark				
08:10 – 09:00	Keynote Speech 1				
09:00 – 10:00	All Stakeholder Meeting				
10:00 – 10:15	Break				
10:15 – 12:00	Cedar I	Cedar II	Cedar III	The Summit	Brightwood ExCOM Meeting
	Session 1A <i>(Chair: Lucio Soibelman)</i>	Session 1B <i>(Chair: Carol Menassa)</i>	Session 1C <i>(Chair: Nora El-Gohary)</i>	Session 1D <i>(Chair: Hubo Cai)</i>	
Infrastructure Monitoring, Control and Analysis 58, 110, 133, 255, 276, 316, 338	Construction Management 26, 88, 108, 159, 228, 235, 265	Energy, Sustainability and Resilience 40, 53, 300, 118, 137, 234, 260	BIM & CIM 3, 10, 36, 42, 43, 47, 280		
Lunch (@ Reflections Gallery)					
12:00 – 13:00	Cedar I	Cedar II	Cedar III	The Summit	
	Session 2A <i>(Chair: Pingbo Tang)</i>	Session 2B <i>(Chair: Bill O'Brien)</i>	Session 2C <i>(Chair: Carlos Caldas)</i>	Session 2D <i>(Chair: Patrick Hsieh)</i>	
Intelligent Sensing & Monitoring 29, 39, 79, 114, 169, 190, 258	Modeling & Simulation 22, 41, 119, 148, 171, 229, 250	Monitoring, Control and Analysis 82, 90, 107, 109, 175, 176, 311	Smart Safety and Health 11, 111, 149, 160, 195, 254, 279		
13:00 – 14:45	Break				
14:45 – 15:00	Cedar I	Cedar II	Cedar III	The Summit	
	Session 3A <i>(Chair: Yong Cho)</i>	Session 3B <i>(Chair: Vineet Kamat)</i>	Session 3C <i>(Chair: Fernanda Leite)</i>	Session 3D <i>(Chair: Jiansong Zhang)</i>	
Asset and Facility Management 49, 98, 100, 155, 168, 249	Robotics and Automation 34, 106, 196, 225, 296, 312	BIM & CIM 51, 77, 85, 104, 162, 164	Augmented & Virtual Reality 44, 99, 156, 170, 202, 238		
15:00 – 16:45	Break				
16:45 – 17:00	The Summit				
17:00 – 18:00	DSA Meeting (update: to start earlier at 16:50)				
18:00 – 19:00	VIMS Meeting				

June 27, 2017 (Tuesday)				
Tamarack Hall				
07:00 – 08:00	Breakfast			
The Cedars				
08:00 – 08:10	Conference Report			
08:10 – 09:00	Keynote Speech 2			
09:00 – 10:00	Demonstration			
10:00 – 10:15	Break			
10:15 – 12:00	Cedar I	Cedar II	Cedar III	The Summit
	Session 4A (Chair: <i>Nora El-Gohary</i>)	Session 4B (Chair: <i>Chimay Anumba</i>)	Session 4C (Chair: <i>Somayeh Asadi</i>)	Session 4D (Chair: <i>Amir Behzadan</i>)
	Data Analytics 80, 124, 157, 203, 244, 293, 294	Intelligent Sensing & Monitoring 23, 184, 215, 242, 267, 278, 313	Modeling & Simulation 18, 165, 241, 209, 220, 252, 262	Safety + Modeling & Simulation 45, 55, 116, 303, 315, 87, 115
12:00 – 13:00	Lunch (@ Reflections Gallery)			
13:00 – 14:45	Cedar I	Cedar II	Cedar III	The Summit
	Session 5A (Chair: <i>Burcu Akinci</i>)	Session 5B (Chair: <i>Mani Golparvar-Fard</i>)	Session 5C (Chair: <i>Mario Bergés</i>)	Session 5D (Chair: <i>Ming Lu</i>)
	BIM & CIM 186, 191, 208, 259, 297, 309, 317	Construction Management 84, 231, 123, 257, 261, 268, 282	Energy, Sustainability and Resilience 207, 213, 251, 266, 274, 284, 314	Project Planning and Control 13, 19, 91, 121, 206, 222, 270
14:45 – 15:00	Break			
15:00 – 16:45	Cedar I	Cedar II	Cedar III	The Summit
	Session 6A (Chair: <i>Timo Hartmann</i>)	Session 6B (Chair: <i>Shih-Chung Kang</i>)	Session 6C (Chair: <i>Changbum Ahn</i>)	Session 6D (Chair: <i>SangHyun Lee</i>)
	BIM & CIM 179, 193, 194, 224, 245, 246, 290	Education 9, 138, 150, 153, 205, 329	Design Management and Collaboration 70, 86, 96, 105, 240, 271, 102	Intelligent Sensing & Monitoring 37, 63, 129, 199, 200, 247, 273
16:45 – 17:00	Break			
Cedar I				
17:00 – 18:00	EDU Meeting			
Tamarack Hall				
18:00 – 20:00	Banquet, Award, and Closing			

Session 1A (Infrastructure Monitoring, Control and Analysis): 10:15 – 12:00 on June 26, 2017 Monday

- #58 3D APPROACH FOR REPRESENTING UNCERTAINTIES OF UNDERGROUND UTILITY DATA
Léon olde Scholtenhuis*, Universiteit Twente; Sisi Zlatanova, Delft University of Technology; Xander den Duijn, Delft University of Technology
- #110 INTEGRATING HIGHWAY PROJECTS DATA IN GIS FOR MAINTENANCE AND REHABILITATION PLANNING: APPLICATIONS, CHALLENGES, AND RECOMMENDATIONS
Jojo France-Mensah*, University of Texas at Austin; Bharathwaj Sankaran, University of Texas at Austin; Bill O'Brien, University of Texas at Austin
- #133 REPRESENTATION REQUIREMENTS FOR LASER SCAN BASED PROBABILISTIC CONDITION ASSESSMENT OF BRIDGES
Varun Kasireddy*, Carnegie Mellon University; Burcu Akinci, Carnegie Mellon University
- #255 TRACKING STRUCTURAL DEFORMATIONS VIA AUTOMATED SAMPLE-BASED POINT CLOUD ANALYSIS
Bahman Jafari, George Mason University; Ali Khaloo, George Mason University; David Lattanzi*, George Mason University
- #276 AN AUTOMATIC ROBUST POINT CLOUD REGISTRATION ON CONSTRUCTION SITES
Pileun Kim*, Georgia Institute of Technology; Yong Cho, Georgia Institute of Technology
- #316 AN AUTONOMOUS VIDEO PROCESSING METHOD FOR CRACK DETECTION ON METALLIC SURFACES BASED ON TEXTURE ANALYSIS AND BAYESIAN DATA FUSION
Fu-Chen Chen, Purdue University; Mohammad Jahanshahi*, Purdue University; Rih-Teng Wu, Purdue University; Chris Joffe, Electric Power Research Institute
- #338 A PRELIMINARY STUDY ON DISASTER WASTE DETECTION AND VOLUME ESTIMATION BASED ON 3D SPATIAL INFORMATION
Hyungtaeck Yoo*, Seoul National University; Hyunwoo Lee, Seoul National University; Seokho Chi, Seoul National University; Bon-Gang Hwang, National University of Singapore; Jinwoo Kim, Seoul National University

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Session 1B (Construction Management): 10:15 – 12:00 on June 26, 2017 Monday

- #26 INVESTIGATING THE PERFORMANCE OF RELATIONAL CONTRACTS USING SOCIAL NETWORK ANALYSIS
Mahmoud Abd Al-Moneim*, Orascom Construction Industry; Omar El-Anwar, Cairo University; Islam El-adaway, University of Tennessee

- #88 3D MODEL-BASED QUANTITY TAKE-OFF FOR CONSTRUCTION ESTIMATES
Pengxiang Han, University of Alberta; Ming-Fung Francis Siu, University of Alberta; Simaan AbouRizk*, University of Alberta; Di Hu, PCL Industrial Management Inc.; Ulrich Hermann, PCL Industrial Management Inc.

- #108 CONSTRUCTION METHOD MODELS USING CONTEXT AWARE CONSTRUCTION REQUIREMENTS FOR AUTOMATED SCHEDULE GENERATION
Justin Ker-Wei Yeoh*, National University of Singapore; Thi Qui Nguyen, National University of Singapore; Ernest L.S. Abbott, National University of Singapore

- #159 MIXED REALITY FOR ELECTRICAL PREFABRICATION TASKS
Jad Chalhoub*, Arizona State University; Steven Ayer, Arizona State University

- #228 LONG TERM CHANGE PATTERN ANALYSIS OF BIDDING PRICE BASED ON NON-PARAMETRIC FRAMEWORK
Yang Cao*, Georgia Institute of Technology

- #235 TOWARDS DEVELOPING AN ONTOLOGY FOR EARTHWORK OPERATIONS
Alhusain Taher, Concordia University; Faridaddin Vahdatikhaki, University of Twente; Amin Hammad*, Concordia University

- #265 SINGLE TOWER CRANE ALLOCATION USING ANT COLONY OPTIMIZATION
Mohamed Abdel-Raheem*, University of Texas Rio Grande Valley; Carlos Trevino, University of Texas Rio Grande Valley

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Session 1C (Energy, Sustainability and Resilience): 10:15 – 12:00 on June 26, 2017 Monday

- #40 ANALYSIS OF TIME DELAY INTERVAL AND ENERGY LOAD VARIATION FOR NON-INTRUSIVELY EXTRACTING OCCUPANTS' ENERGY-USE INFORMATION IN COMMERCIAL BUILDINGS
Hamed Nabizadeh Rafsanjani*, University of Nebraska-Lincoln; Changbum Ahn, University of Nebraska-Lincoln; Jiayu Chen, City University of Hong Kong

- #53 MODELLING THE DYNAMIC INTERACTION BETWEEN BUILDING PERFORMANCE AND OCCUPANT WELL-BEING
Flavia Grey Rodriguez*, Stanford University; Renate Fruchter, Stanford University

- #300 UNDERSTANDING BUILDING ENERGY USE MODES AND THERMAL COMFORT FOR IMPROVED ENERGY EFFICIENCY AND SATISFACTION
Kadir Amasyali*, University of Illinois at Urbana-Champaign; Nora El-Gohary, University of Illinois, Urbana-Champaign

- #118 DATA SENSING APPROACHES TO MONITORING BUILDING ENERGY USE AND OCCUPANT BEHAVIOR
Yewande Abraham*, Penn State University; Chimay Anumba, University of Florida, Gainesville; Somayeh Asadi, Penn State

- #137 BIG BUILDINGS AND BIG DATA: DO ENERGY DISCLOSURE POLICIES IMPACT ENERGY USE OVER TIME?
Constantine Kontokosta*, New York University; Sokratis Papadopoulos, New York University

- #260 DATA-DRIVEN RESIDENTIAL BUILDING ENERGY CONSUMPTION PREDICTION FOR SUPPORTING MULTISCALE SUSTAINABILITY ASSESSMENT
Lufan Wang*, University of Illinois at Urbana Champaign; Nora El-Gohary, University of Illinois, Urbana-Champaign

- #234 SPATIALLY CONSTRAINED DECENTRALIZATION OF URBAN ENERGY SUPPLY DRIVEN BY FLUCTUATIONS IN HUMAN MOBILITY
Neda Mohammadi*, Georgia Institute of Technology; John Taylor, Georgia Institute of Technology

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Session 1D (BIM & CIM): 10:15 – 12:00 on June 26, 2017 Monday

- #3 BIM TO FACILITIES MANAGEMENT: PRESENTING A PROVEN WORKFLOW FOR INFORMATION EXCHANGE
Alireza Borhani*, University of Washington; Hyun Woo Lee, University of Washington; Carrie Stuarts Dossick, University of Washington; Laura Osburn, University of Washington; Marc Kinsman, Mortenson Construction

- #10 CONCEPTS FOR FORMAL MODELING AND MANAGEMENT OF BUILDING DESIGN OPTIONS
Hannah Mattern*, Ruhr University Bochum; Markus König, Ruhr University Bochum

- #36 INTEGRATING BIM AND OPTIMIZATION TECHNIQUES FOR ENHANCED TOWER CRANE PLANNING
Yuanshen Ji*, University of Texas at Austin; Bharathwaj Sankaran, University of Texas at Austin; Jiyong Choi, University of Texas at Austin; Fernanda Leite, University of Texas at Austin

- #42 APPLIED BIM: AMT AND MTSP INTEGRATED APPROACH FOR THE INTERIOR PATROL ROUTING PROBLEM
Chun-Hao Chen, National Taiwan University; Albert Chen*, National Taiwan University

- #43 A SEMI-AUTOMATIC APPROACH TO DETECT STRUCTURAL COMPONENTS FROM CAD DRAWINGS FOR CONSTRUCTING AS-IS BIM OBJECTS
Qiuchen Lu*, HKU; Sanghoon Lee, The University of Hong Kong

- #47 METHOD OF BRIDGE STRUCTURAL ANALYSIS BASED ON BRIDGE INFORMATION MODELING
Rucheng Xiao, Tongji University; Yu Lian, Sichuan Development and Reform Commission; Bin Sun*, Tongji University; Xinwei Zhao, Tongji University; Zhao Liu, Shanghai Municipal Engineering Design Institute (Group) Ltd.; Pingbo Tang, Arizona State University

- #280 A CASE STUDY IN DATA VISUALIZATION FOR LINKED BIM AND BMS DATA
Jennifer Lather*, Pennsylvania State University; Robert Amor, University of Auckland; John Messner, Pennsylvania State University

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Session 2A (Intelligent Sensing & Monitoring): 13:00 – 14:45 on June 26, 2017 Monday

- #29 A PERSONALIZED HVAC CONTROL SMARTPHONE APPLICATION FRAMEWORK FOR IMPROVED HUMAN HEALTH AND WELL-BEING
Da Li, University of Michigan; Carol Menassa*, University of Michigan; Vineet Kamat, University of Michigan
- #39 AUTOMATED CHANGE DIAGNOSIS OF SINGLE-COLUMN-PIER BRIDGES BASED ON 3D IMAGERY DATA
Ying Shi, Southeast University; Wen Xiong*, Southeast University; Vamsisai Kalasapudi, Arizona State University; Chao Geng, Anhui Transportation Holding Group Co., Ltd; Cheng Zhang, Arizona State University; Pingbo Tang, Arizona State University
- #79 USING PHOTOMETRIC STEREO METHOD IN EVALUATING THE VOLUME OF POTHOLES
Peng Yuan Chen*, National Taiwan University; Shih-Chung Kang, National Taiwan University
- #114 COMPARISON OF TRADITIONAL PHASE SHIFT LASER SCANNING AND INFRARED SCANNING TECHNIQUES
Nathan Blinn, University of Florida; Ray Issa*, University of Florida
- #169 MOBILE ASSET TRACKING FOR DYNAMIC 3D CRANE WORKSPACE GENERATION IN REAL TIME
Jingdao Chen, Georgia Institute of Technology; Yihai Fang, Georgia Institute of Technology; Yong Cho*, Georgia Institute of Technology
- #190 VISUAL DATA ANALYTICS FOR PROACTIVE PROJECT CONTROLS
Jacob Lin*, University of Illinois at Urbana-Champaign; Mani Golparvar-Fard, University of Illinois at Urbana-Champaign
- #258 AN INTERACTIVE MODEL-DRIVEN PATH PLANNING AND DATA CAPTURE SYSTEM FOR CAMERA-EQUIPPED AERIAL ROBOTS ON CONSTRUCTION SITES
Amir Ibrahim*, University of Illinois at Urbana-Champaign; Dominic Roberts, University of Illinois at Urbana-Champaign; Mani Golparvar-Fard, University of Illinois at Urbana-Champaign; Timothy Bretl, University of Illinois at Urbana-Champaign

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Session 2B (Modeling & Simulation): 13:00 – 14:45 on June 26, 2017 Monday

- #22 UNCERTAINTY ANALYSIS FOR THERMAL COMFORT EVALUATION IN NATURALLY VENTILATED BUILDINGS
Jianli Chen*, Georgia Institute of Technology
- #41 A BASIC STUDY ON THE EVACUATION CHARACTERISTICS OF HIGH-RISE BUILDING THROUGH COMPARING EVACUATION EXPERIMENT AND SIMULATIONS – A CASE STUDY IN KOREA
JaeHong Kim*, Oklahoma state university; Yongwei Shan, Oklahoma State University; Junho Choi, Pukyung National University; Phil Lewis, Oklahoma State University; Wonhwa Hong, Kyungpook National University
- #119 PLANNING ROUGH-GRADING PROJECTS: CAT HANDBOOK VS. RS MEANS
Chaojue Yi, University of Alberta; Ming Lu*, University of Alberta
- #148 INTEGRATING ACTIVITIES RISK AND TRAFFIC MICROSIMULATION DATA FOR TEMPORAL RISK ASSESSMENT IN CONSTRUCTION WORK ZONES: A PROOF OF CONCEPT
Bharathwaj Sankaran*, University of Texas at Austin; Jojo France-Mensah, University of Texas at Austin; Bill O'Brien, University of Texas at Austin
- #171 DEVELOPMENT OF REAL-TIME INDOOR TEMPERATURE DISTRIBUTION SIMULATION: A PILOT STUDY
Chanachok Chokwitthaya*, Louisiana State University; Yimin Zhu, Louisiana State University; Suraj Talele, University of North Texas; Caleb Traylor, University of North Texas; Yong Tao, University of North Texas
- #229 MULTI ASSET OPTIMIZATION OF ROADWAYS ASSET MAINTENANCE
Omidreza Shoghli*, Western Carolina University; Jesus M. de la Garza, Virginia Tech
- #250 IMPLEMENTATION VERIFICATION AND VALIDATION OF 3D STRUCTURAL ELEMENTS IN A NUMERICAL TOOL FOR NONLINEAR SSI SEISMIC ANALYSIS
Floriana Petrone*, Lawrence Berkeley National Laboratory; Jenna Wong, Lawrence Berkeley National Laboratory; David McCallen, University of California Office of the President; Frank McKenna, University of California, Berkeley

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Session 2C (Monitoring, Control and Analysis): 13:00 – 14:45 on June 26, 2017 Monday

- #82 GEOMETRY-BASED OPTIMIZED POINT CLOUD COMPRESSION METHODOLOGY FOR CONSTRUCTION AND INFRASTRUCTURE MANAGEMENT
Jiawei Chen*, Arizona State University; Cheng Zhang, Arizona State University; Pingbo Tang, Arizona State University
- #90 A COMPREHENSIVE SPATIO-TEMPORAL NETWORK-BASED MODEL FOR DYNAMIC RISK ANALYSIS ON STRUCK-BY-EQUIPMENT HAZARD
Jun Wang*, McMaster University; Saiedeh Razavi, McMaster University
- #107 PROBABILISTIC BUILDING ENERGY PERFORMANCE ANALYSIS OF ULTRA HIGH PERFORMANCE FIBER REINFORCED CONCRETE FAÇADE PANELS
Mohsen Shahandashti*, University of Texas at Arlington; Bahram Abediniangerabi, University of Texas at Arlington; Bradley Bell, University of Texas at Arlington; Simon Chao, University of Texas at Arlington
- #109 IDENTIFYING CRITICAL LINKS IN WATER SUPPLY SYSTEMS SUBJECT TO VARIOUS EARTHQUAKES TO SUPPORT INSPECTION AND RENEWAL DECISION MAKING
Binaya Pudasaini, University of Texas at Arlington; Mohsen Shahandashti*, University of Texas at Arlington; Mohammad Razavi, Risk Solution Management, Inc.
- #175 EMERGENCE OF RESILIENCE FROM INFRASTRUCTURE DYNAMICS: A SIMULATION FRAMEWORK FOR THEORY BUILDING
Kambiz Rasoulkhani*, Texas A&M University; Maria Presa Reyes, Florida International University; Ali Mostafavi, Texas A&M University
- #176 A SCO-ENABLED CONSTRUCTION EQUIPMENT MANAGEMENT SYSTEM
Yuhan Niu*, The University of Hong Kong; Weisheng Lu, The University of Hong Kong; Diandian Liu, The University of Hong Kong; Ke Chen, The University of Hong Kong; Fan Xue, The University of Hong Kong
- #311 MEASURING THE IMPACT OF WORKING MEMORY LOAD ON THE SAFETY PERFORMANCE OF CONSTRUCTION WORKERS
Sogand Hasanzadeh*, University of Nebraska-Lincoln; Bac Dao, University of Nebraska-Lincoln; Behzad Esmaeili, University of Nebraska-Lincoln; Michael D. Dodd, University of Nebraska-Lincoln

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Session 2D (Smart Safety and Health): 13:00 – 14:45 on June 26, 2017 Monday

- #11 LEVEL-OF-EXPERTISE CLASSIFICATION FOR IDENTIFYING SAFE AND PRODUCTIVE MASONS
Abdullatif Alwasel, University of Waterloo; Mohammad Nahangi*, University of Waterloo; Carl Haas, University of Waterloo; Eihab Abdel-Rahman, University of Waterloo

- #111 GAZETTEERS FOR INFORMATION EXTRACTION APPLICATIONS IN CONSTRUCTION SAFETY MANAGEMENT
Nai-Wen Chi*, National Taiwan University; Ken-Yu Lin, University of Washington; Nora El-Gohary, University of Illinois, Urbana-Champaign; Shang-Hsien Hsieh, National Taiwan University

- #149 AN ENSEMBLE APPROACH FOR CLASSIFICATION OF ACCIDENT NARRATIVES
Chalani Udhyami Ubeynarayana, National University of Singapore; Yang Miang Goh*, National University of Singapore

- #160 INVESTIGATION OF THE RELATIONSHIP BETWEEN CONSTRUCTION WORKERS' PSYCHOLOGICAL STATES AND THEIR UNSAFE BEHAVIORS USING VIRTUAL ENVIRONMENT-BASED TESTING
Yantao Yu*, Tsinghua University; Jiansong Zhang, Western Michigan University; Hongling Guo, Tsinghua University

- #195 ENHANCING MOTION TRAJECTORY PREDICTION FOR SITE SAFETY BY INCORPORATING ATTITUDE TOWARD RISK
Khandakar Rashid, Missouri State University; Amir Behzadan*, Missouri State University

- #254 JOINT REASONING OF VISUAL AND TEXT DATA FOR CONSTRUCTION SAFETY INSPECTION
Shuai Tang*, University of Illinois at Urbana-Champaign; Mani Golparvar-Fard, University of Illinois at Urbana-Champaign

- #279 ANALYZING SPATIAL PATTERNS OF WORKERS' GAIT CYCLES FOR LOCATING LATENT FALL HAZARDS
Kanghyeok Yang*, University of Nebraska at Lincoln; Changbum Ahn, University of Nebraska-Lincoln; Mehmet Vuran, University of Nebraska-Lincoln; Hyunsoo Kim, University of Nebraska-Lincoln

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Session 3A (Asset and Facility Management): 15:00 – 16:45 on June 26, 2017 Monday

- #49 OPTIMIZING RAILROAD BRIDGE NETWORKS MANAGEMENT USING MIXED INTEGER LINEAR PROGRAMMING AND GENETIC ALGORITHM
Amirhosein Jafari*, University of New Mexico; Guillermo Pérez, University of New Mexico; Fernando Moreu, University of New Mexico; Vanessa Valentin, University of New Mexico

- #98 THE UTILIZATION OF AN ASSET SAFETY IDENTIFICATION TOOL (ASIT) TO SUPPORT SAFETY DURING FACILITIES MANAGEMENT
Eric Wetzel*, Auburn University; Jason Lucas, Clemson University; Walid Thabet, Virginia Tech

- #100 RISK-AWARE MULTI-OBJECTIVE OPTIMIZATION OF CAPITAL STRUCTURE FOR PRIVATE FINANCING IN INFRASTRUCTURE PROJECTS
Shuai Li*, Purdue University; Hubo Cai, Purdue University

- #155 INTEGRATION OF BIM AND UTILITY SENSOR DATA FOR FACILITIES MANAGEMENT
Kamal Suprabhas*, Purdue University; Hazar Dib, Purdue University

- #168 UNSUPERVISED RECOGNITION OF VOLUMETRIC STRUCTURAL COMPONENTS FROM BUILDING POINT CLOUDS
Jingdao Chen, Georgia Institute of Technology; Yihai Fang, Georgia Institute of Technology; Yong Cho*, Georgia Institute of Technology

- #249 DEFINING A TAXONOMY FOR VIRTUAL 3D CITY MODEL USE CASES WITH A FOCUS ON FACILITY ASSET MANAGEMENT – A VIRTUAL CAMPUS CASE STUDY
Zhouqian Jiang*, Pennsylvania State University; John Messner, Pennsylvania State University; Craig Dubler, Pennsylvania State University

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Session 3B (Robotics and Automation): 15:00 – 16:45 on June 26, 2017 Monday

- #34 AUTOMATIC BARCODE EXTRACTION FOR EFFICIENT LARGE-SCALE INVENTORY MANAGEMENT
Lichao Xu*, University of Michigan; Vineet Kamat, University of Michigan; Carol Menassa, University of Michigan
- #106 FEASIBILITY OF A DRONE-BASED ON-SITE PROXIMITY DETECTION IN AN OUTDOOR CONSTRUCTION SITE
Daeho Kim*, University of Michigan; Kaiqi Yin, University of Michigan; Meiyin Liu, University of Michigan; SangHyun Lee, University of Michigan; Vineet Kamat, University of Michigan
- #196 CONSTRUCTION PRODUCTIVITY AND ERGONOMIC ASSESSMENT USING MOBILE SENSORS AND MACHINE LEARNING
Nipun Nath, Missouri State University; Amir Behzadan*, Missouri State University
- #225 DETECTING AND CLASSIFYING CRANES USING CAMERA-EQUIPPED UAVS FOR MONITORING CRANE-RELATED SAFETY HAZARDS
Dominic Roberts*, University of Illinois at Urbana-Champaign; Mani Golparvar-Fard, University of Illinois at Urbana-Champaign; Timothy Bretl, University of Illinois at Urbana-Champaign
- #296 ROLES, BENEFITS, AND CHALLENGES OF USING UAV TO MONITOR INDOOR CONSTRUCTION
Brenda McCabe*, University of Toronto; Hesam Hamledari, Stanford University; Ehsan Rezazadeh Azar, Lakehead University; Arash Shahi, University of Toronto; Pouya Zangeneh, University of Toronto
- #312 APPLICATION OF ASSISTIVE WEARABLE ROBOTICS TO ALLEVIATE CONSTRUCTION WORKFORCE SHORTAGE: CHALLENGES AND OPPORTUNITIES
Chao Wang*, Louisiana State University; Laura Ikuma, Louisiana State University; Jan Hondzinski, Louisiana State University; Marcio de Queiroz, Louisiana State University

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Session 3C (BIM & CIM): 15:00 – 16:45 on June 26, 2017 Monday

- #51 POST-EARTHQUAKE FIRE SIMULATIONS OF BUILDINGS CONSIDERING THE SEISMIC DAMAGE OF SPRINKLER SYSTEMS
Zhen Xu, University of Science and Technology Beijing; Zongcai Zhang, University of Science and Technology Beijing; Xinzheng Lu*, Tsinghua University
- #77 A FRAMEWORK FOR RULE-BASED VALIDATION OF IFC SPACE BOUNDARIES FOR BUILDING ENERGY ANALYSIS
Huaquan Ying*, The University of Hong Kong; Sanghoon Lee, The University of Hong Kong
- #85 BIM-BASED LIFE CYCLE ASSESSMENT AND COSTING OF BUILDINGS: CURRENT TRENDS AND OPPORTUNITIES
Martin Nwodo*, University of Florida, Gainesville; Chimay Anumba, University of Florida, Gainesville; Somayeh Asadi, Pennsylvania State University
- #104 MODEL-BASED BENCHMARKING FOR HEALTHCARE PROJECTS: SYSTEM REQUIREMENTS AND DEMONSTRATION
Jiyong Choi*, University of Texas at Austin; Fernanda Leite, University of Texas at Austin; Daniel Oliveira, Construction Industry Institute
- #162 LINKING BIM AND GIS MODELS IN INFRASTRUCTURE BY EXAMPLE OF IFC AND CITYGML
Simon Vilgertshofer*, Technical University of Munich; Julian Amann, Technical University of Munich; Bruno Willenborg, Technical University of Munich; Andre Borrmann, The Technical University of Munich; Thomas H. Kolbe, Technical University of Munich
- #164 AUTOMATED WOOD CONSTRUCTION COST ESTIMATION
Temitope Akanbi*, Western Michigan University; Jiansong Zhang, Western Michigan University

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Session 3D (Augmented & Virtual Reality): 15:00 – 16:45 on June 26, 2017 Monday

- #44 HIGH-FIDELITY VISUALIZATION OF FIRE FOLLOWING EARTHQUAKE
Xinzheng Lu*, Tsinghua University; Xiang Zeng, Tsinghua University; Zhen Xu, University of Science and Technology Beijing; Qingle Cheng, Tsinghua University
- #99 QUANTIFYING HUMAN EXPERIENCE IN INTERIOR ARCHITECTURAL SPACES
Ahmed Radwan*, New York University; Semiha Ergan, New York University
- #156 APPLICATION OF IMMERSIVE VIRTUAL ENVIRONMENT (IVE) IN OCCUPANT ENERGY-USE BEHAVIOR STUDIES USING PHYSIOLOGICAL RESPONSES
Sanaz Saeidi*, Louisiana State University; Adam Lowe, Louisiana State University; Neil Johannsen, Louisiana State University; Yimin Zhu, Louisiana State University
- #170 THE IMPACT OF LIGHTING SIMULATION DISCREPANCIES ON HUMAN VISUAL PERCEPTION AND ENERGY BEHAVIOR SIMULATIONS IN IMMERSIVE VIRTUAL ENVIRONMENT
Chanachok Chokwitthaya*, Louisiana State University; Sanaz Saeidi, Louisiana State University; Yimin Zhu, Louisiana State University; Robert Kooima, Louisiana State University
- #202 INTERACTIVE HIGHWAY CONSTRUCTION SIMULATION USING GAME ENGINE AND VIRTUAL REALITY FOR EDUCATION AND TRAINING PURPOSE
Majid Mastali*, Western Michigan University; Jiansong Zhang, Western Michigan University
- #238 DEVELOPMENT OF IMMERSIVE PERSONALIZED TRAINING ENVIRONMENT FOR CONSTRUCTION WORKERS
Idris Jeelani*, North Carolina State University; Kevin Han, North Carolina State University; Alex Albert, North Carolina State University

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Session 4A (Data Analytics): 10:15 – 12:00 on June 27, 2017 Tuesday

- #80 SENTIMENT ANALYSIS FOR THE CONSTRUCTION INDUSTRY: A CASE STUDY OF WEIBO IN CHINA
Maggie Tang*, West Virginia University; Yiming Zhang, West Virginia University; Fei Dai, West Virginia University;
Yoojung Yoon, West Virginia University; Yangqiu Song, West Virginia University
- #124 TOWARDS AUTOMATED INFERENCE OF OCCUPANT BEHAVIORAL DYNAMICS USING PLUG-LOAD ENERGY DATA
Andrew Sonta, Stanford University; Perry Simmons, Stanford University; Rishee Jain*, Stanford University
- #157 DEEP ACTIVE LEARNING FOR CIVIL INFRASTRUCTURE DEFECT DETECTION AND CLASSIFICATION
Chen Feng*, Mitsubishi Electric Research Laboratories (MERL); Ming-Yu Liu, Mitsubishi Electric Research Laboratories (MERL); Chieh-Chi Kao, University of California, Santa Barbara; Teng-Yok Lee, Mitsubishi Electric Research Laboratories (MERL)
- #203 AUTOMATED RECOGNITION AND LOCALIZATION OF PARKING SIGNS USING STREET-LEVEL IMAGERY
Qazaleh Mirsharif, University of Houston; Théophile Dalens, Spot Angels; Mehdi Sqalli, Spot Angels; Vahid Balali*, California State University Long Beach
- #244 SIMILARITY-BASED DEPENDENCY PARSING FOR EXTRACTING DEPENDENCY RELATIONS FROM BRIDGE INSPECTION REPORTS
Kaijian Liu*, University of Illinois at Urbana-Champaign; Nora El-Gohary, University of Illinois at Urbana-Champaign
- #293 STAKEHOLDER OPINION CLASSIFICATION FOR SUPPORTING LARGE-SCALE TRANSPORTATION PROJECT DECISION MAKING
Xuan Lv*, University of Illinois at Urbana-Champaign; Nora El-Gohary, University of Illinois at Urbana-Champaign
- #294 PREDICTING LEAKS IN NATURAL GAS DISTRIBUTION NETWORKS USING GENERALIZED LINEAR MODELS
Yasamin Tari*, Carnegie Mellon University; Matteo Pozzi, Carnegie Mellon University; Mario Bergés, Carnegie Mellon University; Burcu Akinci, Carnegie Mellon University

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Session 4B (Intelligent Sensing & Monitoring): 10:15 – 12:00 on June 27, 2017 Tuesday

- #23 AUTOMATED MONITORING OF THE UTILIZATION RATE OF ONSITE CONSTRUCTION EQUIPMENT
Xiaoning Ren, Concordia University; Zhenhua Zhu*, Concordia University; Chantale Germain, Hydro-Québec; Roger Belair, Hydro-Québec; Zhi Chen, Concordia University

- #184 POTENTIAL FOR USE OF CYBER-PHYSICAL SYSTEMS (CPS) FOR PLANNING AND OPERATION OF MOBILE CRANE ON CONSTRUCTION SITES
Congwen Kan *, University of Florida; Chimay Anumba, University of Florida, Gainesville; John Messner, Pennsylvania State University

- #215 VISION-BASED ACTIVITY ANALYSIS FRAMEWORK CONSIDERING INTERACTIVE OPERATION OF CONSTRUCTION EQUIPMENT
Jinwoo Kim, Seoul National University; Seokho Chi*, Seoul National University; Bon-Gang Hwang, National University of Singapore

- #242 PERSPECTIVE-BASED IMAGE-TO-BIM ALIGNMENT FOR AUTOMATED VISUAL DATA COLLECTION AND CONSTRUCTION PERFORMANCE MONITORING
Khashayar Asadi Boroujeni*, North Carolina State University; Kevin Han, North Carolina State University

- #267 TOWARDS LIGHT INTENSITY ASSISTED NON-INTRUSIVE ELECTRICITY DISAGGREGATION
Jue Wang, Virginia Tech; Farrokh Jazizadeh*, Virginia Tech

- #278 TOWARDS LIGHT INTENSITY ASSISTED NON-INTRUSIVE ELECTRICITY DISAGGREGATION
Nazila Roofigari Esfahan*, University of Florida; Shuming Du, McMaster University; Chimay Anumba, University of Florida, Gainesville; Saiedeh Razavi, McMaster University

- #313 ON THE SCALABILITY OF A LED-BASED INDOOR POSITIONING SYSTEM
Milad Afzalan, Virginia Tech; Farrokh Jazizadeh*, Virginia Tech

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Session 4C (Modeling & Simulation): 10:15 – 12:00 on June 27, 2017 Tuesday

- #18 MODELING THE EFFECT OF A SOCIO-PSYCHOLOGICAL PROCESS ON CONSTRUCTION WORKERS' SAFETY BEHAVIOR
Byungjoo Choi*, University of Michigan; SangHyun Lee, University of Michigan
- #165 BUILDING ACCESSIBILITY CODE COMPLIANCE VERIFICATION USING GAME SIMULATIONS IN VIRTUAL REALITY
Abdullah Alghamdi*, Western Michigan University; Mohammed Sulaiman, Western Michigan University; Abdulaziz Alghamdi, Western Michigan University; Mohammed Alhosan, Western Michigan University; Majid Mastali, Western Michigan University; Jiansong Zhang, Western Michigan University
- #241 INVESTIGATING THE IMPACT OF HUMAN RISK TAKING TENDENCY ON THE LIKELIHOOD OF STRUCK-BY ACCIDENTS IN CONSTRUCTION USING AGENT-BASED SIMULATION
Cenfei Sun*, University of Nebraska-Lincoln; Seungjun Ahn, University of South Australia; Changbum Ahn, University of Nebraska-Lincoln
- #209 STOCHASTIC FORECASTING OF UNKNOWN FUTURE PROJECT STREAMS FOR STRATEGIC PORTFOLIO PLANNING
Alireza Shojaei*, University of Florida; Ian Flood, University of Florida
- #220 AGENT-BASED SIMULATION FRAMEWORK FOR SUPPLY CHAIN MANAGEMENT OF LARGE-SCALE CONSTRUCTION PROJECTS
Minhyuk Jung*, Seoul National University
- #252 ROBUST OUTLIER DETECTION AND NORMAL ESTIMATION IN NOISY INFRASTRUCTURE 3D POINT CLOUDS
Ali Khaloo*, George Mason University; David Lattanzi, George Mason University
- #262 COMPARISON BASIS OF BUILDING INFORMATION MODELING WORKFLOWS FOR ENERGY ANALYSIS
Pelin Gultekin-Bicer*, Bradley University; Issa Ramaji, University of North Florida; Chimay Anumba, University of Florida, Gainesville

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Session 4D (Safety + Modeling & Simulation): 10:15 – 12:00 on June 27, 2017 Tuesday

- #45 EMS RESPONSE ACTIONS IN MASS CASUALTY INCIDENTS
Chang-Chi Chou, National Taiwan University; Albert Chen*, National Taiwan University

- #55 VIDEO-BASED INDOOR HUMAN DETECTION FOR DECISION-MAKING OF THE INSTALLATION LOCATIONS FOR AUTOMATED EXTERNAL DEFIBRILLATORS
Albert Chen*, National Taiwan University; Ching-Chun Chen, National Taiwan University

- #116 PARTITION PROBLEM FOR OPTIMIZING THE DEPLOYMENT OF INCIDENT RESPONSE
Dai Zhi-You, National Taiwan University; Jihfu Kang, Northern Region Engineering Office, Taiwan Area National Freeway Bureau; Ning Li, Northern Region Engineering Office, Taiwan Area National Freeway Bureau; Likai Yang, HwaCom Systems Inc.; Yu-Ting Hsu*, National Taiwan University

- #303 BUILDING SMART TRANSPORTATION HUBS WITH INTERNET OF THINGS TO IMPROVE SERVICES TO PEOPLE WITH SPECIAL NEEDS
Jie gong*, Rutgers University

- #315 A DATA INTEGRATION FRAMEWORK FOR URBAN SYSTEMS ANALYSIS BASED ON GEO-RELATIONSHIP LEARNING
Zheng Yang*, Stanford University; Karan Gupta, Stanford University; Archana Gupta, City of Palo Alto; Rishee Jain, Stanford University

- #87 IMAGING-TO-SIMULATION FRAMEWORK FOR IMPROVING DISASTER PREPAREDNESS OF CONSTRUCTION PROJECTS AND NEIGHBORING COMMUNITIES
Youngjib Ham*, Florida International University; Seung Jae Lee, Florida International University; Arindam Gan Chowdhury, Florida International University

- #115 FORMULATING THE MINIMUM NETWORK CLEARANCE TIME FOR EVACUATION PROBLEMS
Yu-Ting Hsu*, National Taiwan University; Hsiang-Yin Chen, National Taiwan University

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Session 5A (BIM & CIM): 13:00 – 14:45 on June 27, 2017 Tuesday

- #186 REFINEMENT OF THE VISUAL CODE CHECKING LANGUAGE FOR AN AUTOMATED CHECKING OF BUILDING INFORMATION MODELS REGARDING APPLICABLE REGULATIONS
Cornelius Preidel*, Technical University of Munich

- #191 SEMANTIC-RICH 3D CAD MODELS FOR BUILT ENVIRONMENTS FROM POINT CLOUDS: AN END-TO-END PROCEDURE
Yeritza Perez-Perez*, University of Illinois Urbana-Champaign; Mani Golparvar-Fard, University of Illinois at Urbana-Champaign; Khaled El-Rayes, University of Illinois at Urbana-Champaign

- #208 IMPROVING RSSI-BASED INDOOR LOCALIZATION PERFORMANCE BY INTEGRATING BIM
Hainan Chen, City University of Hong Kong; Xiaowei Luo*, City University of Hong Kong; Jian Guo, Hong Kong Polytechnic University

- #259 A COMPREHENSIVE IDENTIFICATION AND CATEGORISATION OF DRIVERS, FACTORS AND DETERMINANTS FOR BIM ADOPTION: A SYSTEMATIC LITERATURE REVIEW
Ahmed Ahmed*, University of Sheffield; Mohamad Kassem, Northumbria University; John Kawalek, University of Sheffield

- #297 BIM-INTEGRATED SYSTEM FOR AUTOMATED VALUE ANALYSIS OF BUILDINGS
Lu Zhang*, Florida International University; Nora El-Gohary, University of Illinois at Urbana-Champaign

- #309 KEYWORD-DRIVEN MODEL VIEW GENERATION FOR CIVIL INFRASTRUCTURE PROJECTS
Tuyen Le*, Iowa State University; H. David Jeong, Iowa State University

- #317 BIM-BASED CONSTRUCTION NOISE HAZARD PREDICTION AND VISUALIZATION FOR OCCUPATIONAL SAFETY AND HEALTH AWARENESS IMPROVEMENT
Weile Wei, Louisiana State University; Chao Wang*, Louisiana State University; Yongcheol Lee, Louisiana State University

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Session 5B (Construction Management): 13:00 – 14:45 on June 27, 2017 Tuesday

- #84 PERFORMANCE ANALYSIS OF A PROBABILISTIC LOCAL SEARCH ALGORITHM FOR INDOOR TRACKING
Jee Woong Park*, Georgia Institute of Technology; Yong Cho, Georgia Institute of Technology
- #231 CONSTRUCTION WORK PLAN PREDICTION FOR FACILITY MANAGEMENT USING TEXT MINING
Yunjeong Mo*, Michigan State University; Dong Zhao, Michigan State University; Matt Syal, Michigan State University; Azizan Aziz, Carnegie Mellon University
- #123 DECISION SUPPORT FOR TEST TRENCH LOCATION SELECTION WITH 3D SEMANTIC SUBSURFACE UTILITY MODELS
Paulina Racz, University of Twente; Lars Syfuss, University of Muenster; Carl Schultz*, University of Muenster; Léon olde Scholtenhuis, University Twente; Faridaddin Vahdatikhaki, University of Twente; Marc van Buiten, University of Twente; Andrée Dorée, University of Twente
- #257 MODEL-DRIVEN VISUAL DATA CAPTURE ON CONSTRUCTION SITES: METHOD AND METRICS OF SUCCESS
Amir Ibrahim*, University of Illinois at Urbana Champaign; Mani Golparvar-Fard, University of Illinois at Urbana-Champaign; Timothy Bretl, University of Illinois at Urbana-Champaign; Khaled El-Rayes, University of Illinois at Urbana-Champaign
- #261 DEVELOPING A SATISFACTORY INPUT FOR PROJECT COMPLEXITY MODEL USING PRINCIPAL COMPONENT ANALYSIS (PCA)
Bac Dao*, University of Nebraska Lincoln; Behzad Esmaili, University of Nebraska-Lincoln; Stuart Anderson, Texas A&M University
- #268 POTENTIAL OF CONVOLUTIONAL NEURAL NETWORK-BASED 2D HUMAN POSE ESTIMATION FOR ON-SITE ACTIVITY ANALYSIS OF CONSTRUCTION WORKERS
Meiyin Liu*, University of Michigan; SangUk Han, Hanyang University; SangHyun Lee, University of Michigan
- #282 ERROR QUANTIFICATION AND VISUALIZATION IN USING SENSORS TO POSITION BACKHOE EXCAVATOR
Ming Lu*, University of Alberta; Monjurul Hasan, University of Alberta, Canada

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Session 5C (Energy, Sustainability and Resilience): 13:00 – 14:45 on June 27, 2017 Tuesday

- #207 RESILIENCE STRATEGIES FOR INTERDEPENDENT MULTISCALE LIFELINE INFRASTRUCTURE NETWORKS
Lina Sela*, The University of Texas at Austin, TX; Udit Bhatia, Northeastern University, Boston, MA; Janice Zhuang, University of Texas, Austin, TX; Auroop R. Ganguly, Northeastern University, Boston, MA
- #213 LATENT RELATIONSHIP BETWEEN CONSTRUCTION COST TAKEOFFS AND ENERGY EFFICIENCY IN MULTIFAMILY GREEN BUILDINGS
Yunjeong Mo, Michigan State University; Dong Zhao*, Michigan State University; Andrew McCoy, Virginia Tech; Jing Du, Texas A&M University; Philip Agee, Virginia Tech
- #251 SIMULATION-BASED OPTIMIZATION OF BUILDING RENOVATION CONSIDERING ENERGY CONSUMPTION AND LIFE-CYCLE ASSESSMENT
Seyed Amirhosain Sharif Arani, Concordia University; Amin Hammad*, Concordia University
- #266 AN ONTOLOGY TO SUPPORT THE MOVE TOWARDS SUSTAINABLE CONSTRUCTION IN SAUDI ARABIA
Abdulmajeed Howsawi*, Western Michigan University; Jiansong Zhang, Western Michigan University
- #274 MAPPING WIND ENERGY POTENTIAL IN NEW YORK CITY USING GEOGRAPHIC INFORMATION SYSTEM PLATFORM AND SEMI-ANALYTICAL METHODS
Samaneh Gholitabar*, New York University
- #284 NON-INTRUSIVE DETECTION OF RESPIRATION FOR SMART CONTROL IN HVAC SYSTEM
Wooyoung Jung, Virginia Tech; Farrokh Jazizadeh*, Virginia Tech
- #314 MULTI-SCALE MODELING OF A 500-YEAR CSZ TSUNAMI INUNDATION WITH CONSTRUCTED ENVIRONMENT
Xinsheng Qin*, University of Washington; Michael Motley, University of Washington; Randall LeVeque, University of Washington; Frank Gonzalez, University of Washington

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Session 5D (Project Planning and Control): 13:00 – 14:45 on June 27, 2017 Tuesday

- #13 SOUND RECOGNITION TECHNIQUES FOR MULTI-LAYERED CONSTRUCTION ACTIVITIES AND EVENTS
Chunhee Cho, Georgia Institute of Technology; Yongcheol Lee*, Louisiana State University; Tianyi Zhang, Louisiana State University

- #19 ARCHITECTURAL FREEDOM IN SPITE OF PRECAST ELEMENTS
Katharina Klemt-Albert, Leibniz Universität Hannover; Philipp Hagedorn*, Leibniz Universität Hannover; Torben Pullmann, albert.ing GmbH; Matthias Bergmann, albert.ing GmbH

- #91 3D THERMAL AND SPATIAL MODELING OF A SUBWAY TUNNEL: A CASE STUDY
Ghassan Al Lafi*, Concordia University; Zhenhua Zhu, Concordia University

- #121 HARDWARE AND SOFTWARE REQUIREMENTS FOR ACOUSTICAL MODELING OF CONSTRUCTION JOBSITES
Chieh-Feng Cheng, Georgia Institute of Technology; Abbas Rashidi*, Georgia Southern University; Mark Davenport, Georgia Institute of Technology; David Anderson, Georgia Institute of Technology; Chris Sabillon, Georgia Southern University

- #206 AEC PROJECT PERFORMANCE PREDICTION AND VALIDATION USING THE ARTIFICIAL NEURAL NETWORK
Ivan Leung*, Stanford University; Calvin Kam, Stanford University; Min Song, Stanford University

- #222 SENSOR-BASED RESOURCE TRACKING FOR MONITORING THE PROGRESS OF REBAR INSTALLATION
Gursans Guven*, Ozyegin University; Esin Ergen, Istanbul Technical University

- #270 AUTOMATION OF PROJECT PLANNING AND RESOURCE SCHEDULING ON A ROUGH GRADING PROJECT
Duanshun Li*, University of Alberta; Chaojue Yi, University of Alberta; Ming Lu, University of Alberta

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Session 6A (BIM & CIM): 15:00 – 16:45 on June 27, 2017 Tuesday

- #179 INVESTIGATING BUILDING SUSTAINABILITY BY APPLYING SENSITIVITY ANALYSIS OF IMPACT FACTORS DURING DESIGN STAGE
Cheng Zhang*, Xi'an Jiaotong-Liverpool University; Lijing Ong, Xi'an Jiaotong-Liverpool University
- #193 IMAGERY-BASED RISK ASSESSMENT USING CROWDSOURCING TECHNOLOGY IN COMPLEX CONSTRUCTION SITES
Cheng Zhang, Arizona State University; Pingbo Tang*, Arizona State University; Pin-Chao Liao, Tsinghua University; Yi Ren, Arizona State University
- #194 INVESTIGATION OF LEVERAGING BIM STANDARDS TO FACILITATE SUSTAINABILITY EVALUATIONS FROM EARLY STAGE OF DESIGN
Issa Ramaji*, University of North Florida; Pelin Gultekin-Bicer, Bradley University; Raphael Crowley, University of North Florida; David Lambert, University of North Florida
- #224 FRAMEWORK OF DYNAMIC DAILY 4D BIM FOR TRACKING CONSTRUCTION PROGRESS THROUGH A WEB ENVIRONMENT
Jaehyun Park*, Purdue University; Hubo Cai, Purdue University
- #245 BENEFITS OF REAL-TIME DATA DRIVEN BIM FOR FM DEPARTMENTS IN OPERATIONS CONTROL AND MAINTENANCE
Omid Davtalab*, University of Southern California
- #246 EXPLORING THE BODY OF KNOWLEDGE FOR BUILDING INFORMATION MODELING IMPLEMENTATION USING THE DELPHI METHOD
Wei Wu*, California State University, Fresno; Glenda Mayo, University of North Carolina at Charlotte; Ray Issa, University of Florida; Tammy McCuen, University of Oklahoma; Deke Smith, bimSMARTfoundation
- #290 AN AUTOMATED RECONSTRUCTION APPROACH OF MECHANICAL SYSTEMS IN BUILDING INFORMATION MODELING (BIM) USING 2D DRAWINGS
CHI YON CHO*, Carnegie Mellon University; Xuesong Liu, Carnegie Mellon University

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Session 6B (Education): 15:00 – 16:45 on June 27, 2017 Tuesday

- #9 WHEN IS A CONSTRUCTION EDUCATIONAL SERIOUS GAME TOO SERIOUS? STRIKING A BALANCE BETWEEN ENGAGEMENT AND LEARNING
Fadi Castronovo*, California State University East Bay; Robert Leicht, Pennsylvania State University; John Messner, Pennsylvania State University
- #138 LEARNING ADVANCED DECISION-MAKING TECHNIQUES AND TECHNOLOGIES THROUGH A COLLABORATIVE PROJECT
Seokyon Hwang*, Lamar University; Mahdi Safa, Lamar University
- #150 ICT-ENABLED CROSS-CULTURAL EDUCATION IN SUSTAINABLE URBANIZATION
Nan Li*, Tsinghua University; Deland Chan, Stanford University; Kevin Hsu, Stanford University; Zhiyong Fu, Tsinghua University; Quan Mao, Tsinghua University
- #153 A MIXED REALITY ENVIRONMENT FOR STUDENTS' LEARNING OF STEEL CONNECTION BEHAVIOR
Hazar Dib*, Purdue University; Nicoletta Adamo-Villani, Purdue University
- #205 A NEW LEARNING MODEL, GUIDED SOFT CLASSROOM, INTEGRATING MOOCS INTO CONVENTIONAL CLASSROOMS FOR UNIVERSITY STUDENTS
Yi-Fen Li*, National Taiwan University; Ching-Mei Tseng, National Chi Nan University; Shih-Chung Kang, National Taiwan University
- #329 HYBRID REAL/VIRTUAL SIMULATION IN AN ENGINEERING LABORATORY COURSE
Yupeng Luo*, California State University, Fresno; Jeevjyot Chhabda, California State University, Fresno

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Session 6C (Design Management and Collaboration): 15:00 – 16:45 on June 27, 2017 Tuesday

- #70 SIMULTANEOUS DATA EXCHANGE BETWEEN BIM AND VR FOR COLLABORATIVE DECISION-MAKING
Jing Du*, Texas A&M University; Zhengbo Zou, Texas A&M University; Yangming Shi, Texas A&M University; Dong Zhao, Michigan State University
- #86 THE NEED FOR TAXONOMIES IN THE ONTOLOGICAL APPROACH FOR INTEROPERABILITY OF HETEROGENEOUS INFORMATION MODELS
Aaron Costin*, University of Florida; Charles Eastman, Georgia Institute of Technology; Ray Issa, University of Florida
- #96 DEVELOPMENT OF AN OCCUPANT-CENTERED INTEGRATED LIGHTING AND SHADING CONTROL FOR ENERGY SAVING AND INDIVIDUAL PREFERENCES
Ting-Chun Kuo, National Taiwan University; Ying-Chieh Chan*, National Taiwan University; Albert Chen, National Taiwan University
- #105 USING DATA DRIVEN METHODOLOGIES TO IDENTIFY PATTERNS IN BAS DATA TO SUPPORT FACILITY OPERATIONS
Gokmen Dedemen, New York University; Marjan Vakilinezhad, New York University; Semiha Ergan*, NYU
- #240 HYBRIDIZING TOPOLOGY OPTIMIZATION AND EVOLUTIONARY COMPUTATION TO SUPPORT COMPUTER-AIDED ENGINEERING DESIGN
Achyuthan Jootoo*, George Mason University; David Lattanzi, George Mason University
- #271 EFFECTS OF PHYSICAL DISORDERS IN NEIGHBORHOODS ON PEDESTRIANS' PHYSIOLOGICAL RESPONSES
Mohammad Bisadi*, University of Nebraska-Lincoln; Hyunsoo Kim, University of Nebraska-Lincoln; Changbum Ahn, University of Nebraska-Lincoln; Yunwoo Nam, University of Nebraska-Lincoln
- #102 STOCHASTIC OPTIMIZATION MODEL FOR SUSTAINABLE WATER TREATMENT WITH MINIMAL ENERGY USE
Jacob Blackwood, Pennsylvania State University; Ebrahim Karan*, Millersville University; Somayeh Asadi, Pennsylvania State University; Atefeh Mohammadpour, Indiana University–Purdue University Fort Wayne ; Sadegh Asgari, Merrimack College

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Session 6D (Intelligent Sensing & Monitoring): 15:00 – 16:45 on June 27, 2017 Tuesday

- #37 VISUAL AWARENESS ON SURFACE FLOW MEASUREMENT
Yao-Yu Yang*, National Taiwan University; Shih-Chung Kang, National Taiwan University

- #63 FIELD MEASUREMENT OF CONSTRUCTION WORKERS' VALENCE USING A WEARABLE EEG DEVICE
Houtan Jebelli*, University of Michigan; Sungjoo Hwang, Ewha Womans University; SangHyun Lee, University of Michigan

- #129 POST-SIMULATION VISUALIZATION OF CONSTRUCTION MANUAL OPERATIONS USING MOTION CAPTURE DATA
Alireza Golabchi*, University of Alberta; SangUk Han, Hanyang University; Simaan AbouRizk, University of Alberta

- #199 A COMPACT AND VERSATILE WIRELESS SENSOR PROTOTYPE FOR AFFORDABLE INTELLIGENT SENSING AND MONITORING IN SMART BUILDINGS
Qian Huang*, Southern Illinois University Carbondale; Chen Mao, Southern Illinois University Carbondale; Yunfeng Chen, Georgia Southern University

- #200 THE IMPACT OF ENGINEERING INFORMATION FORMATS ON CRAFT WORKER EYE GAZE PATTERNS
Omar Alruwaythi*, University of Colorado at Boulder; Matthew Sears, University of Colorado at Boulder; Paul Goodrum, University of Colorado at Boulder

- #247 TOWARDS AN OCCUPANCY-ENHANCED BUILDING HVAC CONTROL STRATEGY USING WI-FI PROBE REQUEST INFORMATION
Xuan Li*, Carnegie Mellon University; Xuesong Liu, Carnegie Mellon University; Zhen Qian, Carnegie Mellon University

- #273 A REAL-TIME EMERGENCY EVACUATION MANAGEMENT SYSTEM (REEMS) USING INDOOR LOCALIZATION TECHNOLOGY
Faxi Yuan, University of Florida; Rui Liu*, University of Florida

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