

Computing in Civil Engineering 2019

Smart Cities, Sustainability, and Resilience



Selected Papers from the ASCE International
Conference on Computing in Civil Engineering 2019

- ▶ Atlanta, GA
- ▶ June 17–19, 2019

Edited by Yong K. Cho, Ph.D.; Fernanda Leite, Ph.D.;
Amir Behzadan, Ph.D.; and Chao Wang, Ph.D.



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COMPUTING IN CIVIL ENGINEERING 2019

*SMART CITIES, SUSTAINABILITY,
AND RESILIENCE*

SELECTED PAPERS FROM THE ASCE INTERNATIONAL
CONFERENCE ON COMPUTING IN CIVIL ENGINEERING 2019

June 17–19, 2019
Atlanta, Georgia

SPONSORED BY
Computing Division of the
American Society of Civil Engineers

EDITED BY
Yong K. Cho, Ph.D.
Fernanda Leite, Ph.D.
Amir Behzadan, Ph.D.
Chao Wang, Ph.D.

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Preface

The ASCE International Conference on Computing in Civil Engineering (i3CE) 2019 was hosted by the Georgia Institute of Technology with sponsorship from ASCE's Computing Division and held in the city of Atlanta, Georgia from June 17-19, 2019. The conference is the Computing Division's major meeting event and is held bi-annually in the United States, with participation from scholars worldwide. i3CE 2019 is aimed at presenting current research being carried out in the area of computing in civil engineering by attracting a strong and active researchers and audience through keynote sections, dedicated topic sessions, industry sessions, and technical committee meetings.

The 2019 Conference, as a standalone event, received 454 abstracts, 288 full papers, and 58 extended abstracts for the poster and demonstration sessions. A total of 230 full papers from 26 countries around the globe were accepted and included in the proceedings. The final set of papers was selected through a rigorous peer-review process, which involved the collection of at least two blinded reviews per paper. The review process was performed for both abstracts and full papers, ensuring that only the best contributions were selected. Finally, the authors had the chance to incorporate reviewers' comments into the final version. We are very pleased with the high quality of selected papers, and we wish to thank both authors and reviewers for their efforts. All papers were divided into three books with the following three research focus areas:

- Visualization, Information Modeling, and Simulation
- Data, Sensing, and Analytics
- Smart Cities, Sustainability, and Resilience

Organizing this conference has been possible only with the support of many. We are particularly grateful to the School of Civil and Environmental Engineering at the Georgia Institute of Technology for their support and infrastructure. We would also like to thank the guidance from the Computing Division's Executive Committee and the assistance from ASCE.

We hope that you enjoyed the technical sessions, posters, demonstrations, technical committee meetings, and industry panel discussion during the conference and that you had a memorable and meaningful i3CE 2019 experience in Atlanta, Georgia.

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Fernanda Leite, Ph.D.

Conference Vice Chair, Organizing Committee University of Texas at Austin

Amir Behzadan, Ph.D.

Chair, Technical Committee, Texas A&M University

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Acknowledgments

The members of the Organizing Committee are recognized for their dedication, support, and contributions for the success of the 2019 ASCE International Conference on Computing in Civil Engineering.

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Special thanks are due to the following Poster Session Chair, Demo Session Chair, Best Paper Award Committee Chair, and Student Assistants for their help with the related process.

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The Organizing Committee acknowledges the support of the technical committee session chairs and members who helped in the peer-review and selection process of the articles that are part of these proceedings.

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Jiansong Zhang	Purdue University
Joseph Louis	Oregon State University

Safety and Health:

Jun Wang	Mississippi State University
Ryan Ahn	Texas A&M University

Simulation:

Wenying Ji	George Mason University
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Visualization:

Steven Ayer	Arizona State University
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Special Topics:

Chen Feng	New York University
Lina Sela	University of Texas, Austin
Qianwei Xu	Tongji University
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The Organizing Committee would also like to thank the following Executive Committee of ASCE Computing Division, Local Conference Committee, and Conference Event Planning and Registration Administrator for their assistance and support for the success of the conference.

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Contents

Built Environment and Infrastructure Monitoring, Assessment, and Maintenance

Exploring the Effects of Lighting Brightness and Color on Occupancy and Emotions.....	1
Alan Wang and Arsalan Heydarian	
Data-Driven Remaining Useful Life Prediction to Plan Operations Shutdown and Maintenance of an Industrial Plant.....	8
Ali Bayesteh, Duanshun Li, and Ming Lu	
Agent-Based Modeling Framework for Simulation of Societal Impacts of Infrastructure Service Disruptions during Disasters.....	16
Amir Esmalian, Maitreyi Ramaswamy, Kambiz Rasoulkhani, and Ali Mostafavi	
Predictive Model Development to Perform Condition Assessment on Pipeline Networks.....	24
Behzad Rouhanizadeh and Sharareh Kermanshachi	
Investigating the Relationships of Socioeconomic Factors Delaying Post-Disaster Reconstruction	33
Behzad Rouhanizadeh and Sharareh Kermanshachi	
Identification, Categorization, and Weighting of Barriers to Timely Post-Disaster Recovery Process.....	41
Behzad Rouhanizadeh, Sharareh Kermanshachi, and Thahomina Jahan Nipa	
CNN-Based Deep Architecture for Reinforced Concrete Delamination Segmentation through Thermography.....	50
Chongsheng Cheng, Zhexiong Shang, and Zhigang Shen	
Feasibility of Low-Cost Infrared Thermal Imaging to Assess Occupants' Thermal Comfort	58
Da Li, Carol C. Menassa, and Vineet R. Kamat	
CLOI: A Shape Classification Benchmark Dataset for Industrial Facilities	66
Eva Agapaki, Alex Glyn-Davies, Sara Mandoki, and Ioannis Brilakis	
Towards a Review of Building Energy Forecast Models.....	74
Hannah Daniel, Bharadwaj R. K. Mantha, and Borja García de Soto	
Qualitative Assessment of Indirect Risks Associated with Unmanned Aerial Vehicle Flights over Construction Job Sites.....	83
Hashem Izadi Moud, Ian Flood, Alireza Shojaei, Yuanxin Zhang, Xun Zhang, Mehdi Tadayon, and Mohsen Hatami	

Saliency Detection Analysis of Pedestrians' Physiological Responses to Assess Adverse Built Environment Features	90
Jinwoo Kim, Megha Yadav, Changbum R. Ahn, and Theodora Chaspari	
The Influence of Building Design, Sensor Placement, and Occupant Preferences on Occupant Centered Lighting Control	98
June Young Park and Zoltan Nagy	
A Hybrid Information Fusion Method for Fusing Data Extracted from Inspection Reports for Supporting Bridge Data Analytics.....	105
Kaijian Liu and Nora El-Gohary	
Opportunities for Applying Camera-Equipped Drones towards Performance Inspections of Building Facades	113
Kaiwen Chen, Georg Reichard, and Xin Xu	
Computational Simulation-Based Comparison of Dual and Singular Water Distribution Infrastructure Systems	121
Kambiz Rasoulkhani, Ali Mostafavi, and Sybil Sharvelle	
Construction Equipment Activity Recognition from IMUs Mounted on Articulated Implements and Supervised Classification.....	130
Khandakar M. Rashid and Joseph Louis	
Machine Learning-Based Prediction of Building Water Consumption for Improving Building Water Efficiency	139
Lufan Wang and Nora M. El-Gohary	
Assessing the Effect of Pavement Distresses by Means of LiDAR Technology	146
Maria Rosaria De Blasiis, Alessandro Di Benedetto, Margherita Fiani, and Marco Garozzo	
Investigating the Appliance Use Patterns on the Households' Electricity Load Shapes from Smart Meters	154
Milad Afzalan and Farrokh Jazizadeh	
Impact of Ground Subsidence on Groundwater Quality: A Case Study in Los Angeles, California	162
Mohammad Khorrami, Mohsen Hatami, Babak Alizadeh, Hedieh Khorrami, Peyman Rahgozar, and Ian Flood	
Damping Estimation from Full-Scale Traffic-Induced Vibrations of a Suspension Bridge	171
Nicolò Daniotti, Etienne Cheynet, Jasna B. Jakobsen, and Jonas Snæbjörnsson	
Optimizing the Socioeconomic Benefit of Post-Disaster Strategies by Prioritizing Reconstruction of Damaged Facilities	180
Pedram Ghannad, Yong-Cheol Lee, Carol Friedland, and Eunhwa Yang	

Information Requirements for Virtual Environments to Study Human-Building Interactions during Active Shooter Incidents	188
Runhe Zhu, Burcin Becerik-Gerber, Gale Lucas, Erroll Southers, and David V. Pynadath	
Comparison of Deep Learning Model Precision for Detecting Concrete Deterioration Types from Digital Images.....	196
Satoshi Anai, Nobuyoshi Yabuki, and Tomohiro Fukuda	
Video-Based Activity Forecasting for Construction Safety Monitoring Use Cases	204
Shuai Tang, Mani Golparvar-fard, Milind Naphade, and Murali M. Gopalakrishna	
Planning and Monitoring of Building Energy Demands under Uncertainties by Using IoT Data	211
Soowon Chang, Daniel Castro-Lacouture, Kanae Matsui, and Yoshiki Yamagata	
Bridge Damage Prediction Using Deep Neural Network.....	219
Soram Lim and Seokho Chi	
A Deep Learning Based Automated Structural Defect Detection System for Sewer Pipelines.....	226
Srinath S. Kumar and Dulcy M. Abraham	
A Semantic Model for Wireless Sensor Networks in Cognitive Buildings	234
Stalin P. Ibanez, Theresa Fitz, and Kay Smarsly	
A Connected Work Zone Hazard Detection System for Roadway Construction Workers.....	242
Wenjun Han, Elizabeth White, Mike Mollenhauer, and Nazila Roofigari-Esfahan	
Feasibility Assessment of Heat Flux Sensors for Human-in-the-Loop HVAC Operations	251
Wooyoung Jung, Matthew Chan, Farrokh Jazizadeh, and Thomas E. Diller	
A Scalable Cyber-Physical System Data Acquisition Framework for the Smart Built Environment	259
Xinghua Gao, Pardis Pishdad-Bozorgi, Dennis R. Shelden, and Shu Tang	
Machine Learning Applications in Facility Life-Cycle Cost Analysis: A Review.....	267
Xinghua Gao, Pardis Pishdad-Bozorgi, Dennis R. Shelden, and Yuqing Hu	
Top-Down Partitioning of Reinforced Concrete Bridge Components	275
Yi-Pu Zhao, Haotian Wu, and Patricio A. Vela	
Effective Features to Predict Residential Energy Consumption Using Machine Learning	284
Yunjeong Mo, Dong Zhao, and Matt Syal	