

Seulbi Lee

Assistant Professor

Division of Architecture & Urban Design,
Incheon National University

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RESEARCH INTERESTS

Smart and Sustainable City

Digital-Twin City Modeling, Risk-Informed Decision Making, Topological Data Analysis, Geospatial Modeling, Big Data Analytics

Resilient Infrastructures

Probabilistic Risk Assessment, Statistical Interdependence, Network Reliability Analysis, Uncertainty Quantification

EDUCATION

Combined Master of Science and Doctor of Philosophy 2012 – 2019

in Architecture and Architectural Engineering, *Seoul National University*, Seoul, Republic of Korea (Area: Construction Engineering and Management)

- Dissertation: Functionality Assessment of the Seismic-Damaged Lifeline Systems under Cascading Failures
- Advisor: Dr. Moonseo Park

Bachelor of Science 2008 – 2012

in Architecture and Architectural Engineering, *Seoul National University*, Seoul, Republic of Korea

ACADEMIC & PROFESSIONAL EXPERIENCE

Assistant Professor 2021 – Present

Division of Architecture & Urban Design, *Incheon National University*, Incheon, Republic of Korea

Post-doctoral Research Associate 2021 – 2021

Dept. of Architectural and Urban Systems Engineering, *Ewha Womans University*, Seoul, Republic of Korea

Post-doctoral Research Associate	2019 – 2021
Dept. of Construction Science, <i>Texas A&M University</i> , College Station, TX, U.S.	
Texas A&M Institute of Data Science (TAMIDS), <i>Texas A&M University</i> , College Station, TX, U.S.	
Post-doctoral Research Associate	2019 – 2019
Institute of Construction and Environmental Engineering, <i>Seoul National University</i> , Seoul, Republic of Korea	
Teaching Assistant	2014 – 2015
Dept. of Architecture and Architectural Engineering, <i>Seoul National University</i> , Seoul, Republic of Korea	
<ul style="list-style-type: none"> • Construction Cost Planning & Management • Architectural Engineering Systems Design • Advanced Construction Technology 	
Research Assistant	2012 – 2019
Dept. of Architecture and Architectural Engineering, <i>Seoul National University</i> , Seoul, Republic of Korea	

PROPOSAL WRITING EXPERIENCES (AWARDED)

Behavior Analysis of Socially Vulnerable Households Responding to Planned Power Shutoffs (\$2,500 for 6months)	2020
<ul style="list-style-type: none"> • Sponsor: Natural Hazards Center, University of Colorado Boulder • Role: Contributed to idea generation, literature review, defining the scope, objectives, tasks, and writing the proposal 	
Seismic Risk Analysis of Architectural Heritages in Gyeongju and Pohang (\$174,170 for 5months)	2018
<ul style="list-style-type: none"> • Sponsor: Cultural Heritage Administration of Korean Government • Role: Contributed to literature review, defining the scope, objectives, tasks, and writing the proposal 	
Functional Loss Estimation Model for the Seismic-Damaged Lifeline System (\$266,670 for 21months)	2017
<ul style="list-style-type: none"> • Sponsor: Ministry of Land, Infrastructure and Transport of Korean Government • Role: Contributed to idea generation, literature review, defining the scope, objectives, tasks, and writing the proposal 	

Conceptual Framework Development for IoT, Cloud, Big data, and Mobile based Integrated Facility Management System 2016
 (\$59,440 for 6months)

- Sponsor: Republic of Korea Air Force Headquarters
- Role: Contributed to literature review, defining the scope, objectives, tasks, and writing the proposal

A Study on Evacuation Characteristics of Vulnerable People 2015
 (\$66,410 for 6months)

- Sponsor: Ministry of Interior and Safety of Korean Government
- Role: Contributed to idea generation, literature review, defining the scope, objectives, tasks, and writing the proposal

PUBLICATIONS

Refereed Journal Papers

- [J11] Kim, J., Kamari, M., **Lee, S.**, and Ham, Y. “Visual Inspection-to-Vulnerability Assessment of Utility Poles in Power Distribution Infrastructure Systems.” *Journal of Construction Engineering and Management*, ASCE, 147(10), 04021121.
[https://doi.org/10.1061/\(ASCE\)CO.1943-7862.0002153](https://doi.org/10.1061/(ASCE)CO.1943-7862.0002153) 2021
- [J10] **Lee, S.** and Ham, Y. “Probabilistic Framework for Assessing the Vulnerability of Power Distribution Infrastructures under Extreme Wind Conditions.” *Sustainable Cities and Society*, Elsevier, 65, 102587.
<https://doi.org/10.1016/j.scs.2020.102587> 2021
- [J09] **Lee, S.**, Park, M., Lee, H., and Ham, Y. “Impact of Demand-side Response on Community Resilience: Focusing on a Power Grid after Seismic Hazards.” *Journal of Management in Engineering*, ASCE, 36(6), 04020071. [https://doi.org/10.1061/\(ASCE\)ME.1943-5479.0000844](https://doi.org/10.1061/(ASCE)ME.1943-5479.0000844) 2020
- [J08] **Lee, S.**, Park, M., Lee, H., and Choi, M. “Bayesian Network-based Seismic Damage Estimation for Power and Potable Water Supply System.” *Reliability Engineering and System Safety*, Elsevier, 197, 106796. <https://doi.org/10.1016/j.ress.2020.106796> 2020
- [J07] Choi, M., **Lee, S.**, Hwang, S., Park, M., & Lee, H. S. (2020). “Comparison of Emergency Response Abilities and Evacuation Performance Involving Vulnerable Occupants in Building Fire Situations.” *Sustainability*, MDPI, 12(1), 87.
<https://doi.org/10.3390/su12010087> 2020
- [J06] **Lee, S.**, Hwang, S., Park, M., and Lee, H. “Damage Propagation from Component Level to System Level in the Electricity Sector.” *Journal of Infrastructure Systems*, ASCE, 24(3), 04018016,
[https://doi.org/10.1061/\(ASCE\)IS.1943-555X.0000437](https://doi.org/10.1061/(ASCE)IS.1943-555X.0000437) 2018

- [J05] Choi, M., Starbuck, R., **Lee, S.**, Hwang, S., Lee, S., Park, M., and Lee, H. “Distributed and Interoperable Simulation for Comprehensive Disaster Response Management in Facilities.” *Automation in Construction*, Elsevier, 93, 12-21. <https://doi.org/10.1016/j.autcon.2018.05.007> 2018
- [J04] **Lee, S.**, Park, M., and Lee, H. “Robustness Estimation for Power and Water Supply Network: in the Context of Failure Propagation.” *Korean Journal of Construction Engineering and Management*, KICEM, 19(3), 33-42. <http://dx.doi.org/10.6106/KJCEM.2018.19.3.033> (Korean) 2018
- [J03] Ji, D., **Lee, S.**, Lee, H., and Park, M. “Analysis on Disaster Information Effect Process to Occupant Behaviour: Focusing on Relationship to Egress Time.” *Korean Journal of Construction Engineering and Management*, KICEM, 19(3), 11-22. <http://dx.doi.org/10.6106/KJCEM.2018.19.3.011> (Korean) 2018
- [J02] Kim, J., Lee, H., Park, M., and **Lee, S.** “A Dynamic Approach for Evaluating the Validity of Boosting Policies for Green Standard for Energy and Environment Design Certification.” *Korean Journal of Construction Engineering and Management*, KICEM, 17(1), 28-39. <http://dx.doi.org/10.6106/KJCEM.2016.17.1.028> (Korean) 2016
- [J01] **Lee, S.**, Park M., Lee, H., and Hwang, S. “Analysis of the Degraded Performance and Restoration Plan of Lifeline Systems Considering Interdependency in the Post-disaster.” *Korean Journal of Construction Engineering and Management*, KICEM, 15(4), 139-149. <http://dx.doi.org/10.6106/KJCEM.2014.15.4.139> (Korean) 2014

Refereed Conference Papers

- [C07] **Lee, S.** and Ham, Y. “Probabilistic Analysis of Structural Reliability of Leaning Poles in Power Distribution Infrastructure Systems under Extreme Wind Loads.” *Proceedings of Construction Research Congress 2020*, ASCE, Reston, VA, U.S. (Held in Tempe, AZ, U.S. on Mar.8-10) 2020
- [C06] **Lee, S.**, Park, M., and Lee, H. “Robustness Estimation of the Seismic-Damaged Electric Power System in the Context of Failure Propagation.” *Proceedings of the 36th International Conference of the System Dynamics Society*, SDS, Albany, NY, U.S. (Held in Reykjavik, Iceland on Aug. 6-9) 2018
- [C05] Yoon, I., Lee, H., Park, M., **Lee, S.**, and Kwon, B. “Development of a Simulation Model for Housing Market Policy Considering Demand-Supply Shift between Sales and Rental Market.” *Proceedings of the 7th International Conference on Construction Engineering and Project Management*, KICEM, Seoul, Republic of Korea (Held in Chengdu, China on Oct. 27-30) 2017
- [C04] Hwang, S., Choi, M., Starbuck, R., **Lee, S.**, Lee, S., and Park, M. “High Level Architecture (HLA) Compliant Distributed Simulation Platform for Disaster Preparedness and Response in Facility Management.” *Proceedings of the 2016 Winter Simulation Conference*, IEEE, Washington D.C., U.S. (Held in Washington, D.C., U.S. on Dec. 11-14) 2016

- [C03] Lee, S., Park, M., Lee, H., and Jang, Y. “An Empirical Study on the Applicability of Growth-share Matrix in the Construction Industry” 2015
Proceedings of the 6th International Conference on Construction Engineering and Project Management, KICEM, Seoul, Republic of Korea (Held in Busan, Republic of Korea on Oct. 11-14)
- [C02] Park, S., Lee S., Lee, H., Choi, M., Hwang, S., Moon, M., Lee, S., and Pyeon, J. “A Framework for Post-Disaster Facility Restoration Management: Needs and Requirements for Use of Hybrid Simulation.” 2014
Proceedings of Construction Research Congress 2014, ASCE, Reston, VA, U.S. (Held in Atlanta, GA, U.S. on May 19-21)
- [C01] Shin, M., Lee, H., Park, M., and Lee, S. “An Analysis of Mental Process within Construction Workforces for Project-level Safety Management.” 2013
Proceedings of the 31st International Conference of the System Dynamics Society, SDS, Albany, NY, U.S. (Held in Cambridge, MA, U.S. on July 21-25)

PATENTS

- [P01] Park, M and Lee, S. “Seismic Damage Estimation Method System for Electric Power System.” (Korea, Patent 10-1930174) 2018

AWARDS & HONORS

- Excellent Paper Award, KICEM** 2014
 Given to the authors of the outstanding paper among the ones published in Korean Journal of Construction Engineering and Management