

**Junhwa Lee**

Postdoctoral Researcher

School of Civil, Architectural Engineering and Landscape Architecture

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**Education**

**B.S. in Civil Engineering**, February 2016, UNIST, Ulsan, Korea (Graduated *cum laude*)

**Ph.D. in Civil Engineering**, August 2020, UNIST, Ulsan, Korea

**Dissertation:**

Long-term displacement measurement of full-scale bridges using computer vision and LiDAR

**Research Interests**

* Displacement measurement
* Static stress measurement
* Cable control and monitoring
* Structural health monitoring
* Smart construction

**Research Experience**

**Graduate Research Assistant**

*March 2016 – August 2019*

Smart Infrastructure and Systems Laboratory

Ulsan National Institute of Science and Engineering (UNIST), Korea

Advisor: Prof. Sung-Han Sim

**Graduate Research Assistant**

*September 2019 – August 2020*

Structural Reliability & Disaster Risk Laboratory

Ulsan National Institute of Science and Engineering (UNIST), Korea

Advisor: Prof. Young-Joo Lee

**Postdoctoral Researcher**

*September 2020 – February 2022*

Structural Reliability & Disaster Risk Laboratory

Ulsan National Institute of Science and Engineering (UNIST), Korea

Advisor: Prof. Young-Joo Lee

**Postdoctoral Researcher**

*March 2022 – Current*

Smart Construction Laboratory

Sungkyunkwan University, Korea

Advisor: Prof. Sung-Han Sim

**Awards and Honors**

**UNI-STAR Scholarship**

Duration: March 2011 – February 2017

Top entrance score scholarship for undergraduate school

**Global Ph.D. Fellowship (GPF)**

Duration: March 2017 – August 2020

Grants: KRW 30,000,000 / year

Funding code: NRF- 2017H1A2A1046416

Title: Bridge performance evaluation using multisensor information fusion by deep learning

Funded by National Research Foundation (NRF) and Ministry of Education

**Teaching Experience**

**Graduate Teaching Assistant at UNIST**

Structural Engineering Lab (2015 fall, 2016 spring)

Introduction to Structural Dynamics (2017 fall, 2019 fall)

Structural Dynamics (2018 spring)

Advanced Engineering Mathematics (2019 spring)

**Journal Publications**

**International (SCI)**

1. **Lee, J.**, Jeong, S., Kim, H., Lee, K.-C., and Sim, S.-H. (2022), "[Comparative study of long-term displacement measurement methods - Focusing on a pre-stressed concrete bridge under construction](https://doi.org/10.1016/j.measurement.2022.111691)," Measurement, 201, pp.111691.
2. Lee, J., Jeong, S., **Lee, J.**, Sim, S.-H., Lee, K.-C., and Lee, Y.-J. (2022), "Sensor data-based probabilistic monitoring of time-history deflections of railway bridges induced by high-speed trains," Structural Health Monitoring, 14759217211063424.
3. Lee, S., **Lee, J.**, Park, J.-W., and Sim, S.-H. (2021), “Nontarget-based measurement of 6-DOF displacement using combined RGB color and depth information,” IEEE/ASME Transactions on Mechatronics, 26(3), pp.1358-1368.
4. Jeong, J., Kim, H., **Lee, J.**, and Sim, S.-H. (2021), “Automated wireless monitoring system for cable tension forces using deep learning,” Structural Health Monitoring, 20(4), pp.1805-1821.
5. **Lee, J.**, Lee, K.-C., Jeong, S., Lee, Y.-J., and Sim, S.-H. (2020), "Long-term displacement measurement of full-scale bridges using camera ego-motion compensation," Mechanical Systems and Signal Processing, 140.
6. **Lee, J.**, Jeong, S., Lee, Y.-J., and Sim, S.-H. (2019), "Stress estimation using digital image correlation with compensation of camera motion-induced error," Sensors, 9(24), pp.5503.
7. Lee, J., Lee, K.-C., Sim, S.-H., **Lee, J.**, and Lee, Y.-J. (2019), "Bayesian prediction of prestressed concrete bridge deflection using finite element analysis," Sensors, 19(22), pp.4956.
8. **Lee, J.**, Lee, K.-C., Lee, S., Lee, Y.-J., and Sim, S.-H. (2019), "Long-term displacement measurement of bridges using a LiDAR system," Structural Control and Health Monitoring, 26(10), pp.e2428.
9. Jeong, S., **Lee, J.**, Cho, S., and Sim, S.-H. (2019), "Integrated cable vibration control system using Arduino," Smart Structures and Systems, 23(6), pp.695-702.
10. **Lee, J.**, Kim, E., Gwon, S., Cho, S., and Sim, S.-H. (2019), "Uniaxial static stress estimation for concrete structures using digital image correlation," Sensors, 19(2), pp.319.
11. Cho, S., **Lee, J.**, and Sim, S.-H. (2018), "Comparative study on displacement measurement sensors for high-speed railroad bridge," Smart Structures and Systems, 21(5), pp.637-652.
12. **Lee, J.**, Lee, K.-C., Cho, S., and Sim, S.-H. (2017), "Computer vision-based structural displacement measurement robust to light-induced image degradation for in-service bridges," Sensors, 17(1), pp.2317.
13. Kim, H., **Lee, J.**, Ahn, E., Cho, S., Shin, M., and Sim, S.-H. (2017), "Concrete crack identification using a UAV incorporating hybrid image processing," Sensors, 17(9), pp.2052.
14. Cho, S., Sim, S.-H., Park, J.-W., and **Lee, J.** (2014), "Extension of indirect displacement estimation method using acceleration and strain to various types of beam structures," Smart Structures and Systems, 14(4), pp.699-718.

**Domestic (KCI)**

1. **Lee, J.**, Cho, S., and Sim, S.-H. (2014), "Vision-based displacement measurement system operable at arbitrary positions,” Journal of the Korea institute for structural maintenance and inspection, 18(6), pp.123-130.