WoongHee Jung

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EDUCATION

University of Notre Dame Notre Dame, IN
Ph.D., Civil and Environmental Engineering and Earth Science Expected May 2025
Thesis: *Advancements in uncertainty quantification for coastal hazard assessment*
Advisor: Alexandros Taflanidis

Seoul National University Seoul, Korea
M.S., Department of Civil & Environmental Engineering Feb 2018
Thesis: *Short-term prediction of wind velocity on bridge deck*
Advisor: Ho-Kyung Kim

Seoul National University Seoul, Korea
B.S., Department of Civil & Environmental Engineering Feb 2016
Cum Laude

RESEARCH EXPERIENCE

University of Notre Dame Notre Dame, IN
Graduate Research Assistant, Civil and Environmental Engineering and Earth Science
Aug 2020 – Present

- Improved computational efficiency in uncertainty quantification for coastal hazard assessment, specifically applied to storm surge hazard assessment.
- Proposed a computationally efficient global sensitivity analysis for problems involving computationally expensive numerical models and high-dimensional outputs.
- Proposed an efficient optimization for selecting a subset of hazard scenarios across extended regions, establishing hazard estimates consistent with those obtained from the full scenario set.
- Proposed adaptive formulations within Monte Carlo frameworks for efficient real-time storm surge prediction by establishing information sharing across storm advisories.
- Validated benefits of metamodeling techniques for regional storm surge hazard assessment.

Korea Bridge Design & Engineering Research Center Seoul, Korea
Researcher Mar 2018 – Dec 2019

- Established a real-time bridge management system through AI/ML techniques against hazardous situations such as strong wind and abnormal vibrations.

TEACHING EXPERIENCE

University of Notre Dame Notre Dame, IN
Teaching Assistant, Civil and Environmental Engineering and Earth Science
Feb 2021 – May 2022

- CE30150: Modeling and Dynamics of Building Systems
- CE30200: Introduction to Structural Engineering

PUBLICATIONS

- **Jung, W.**, Taflanidis, A. A., Nadal-Caraballo, N. C., Yawn, M. C., & Aucoin, L. A. (2024). Hazard-consistent scenario selection for long-term storm surge risk assessment over extended coastal regions. *Coastal Engineering*, 104620.
- **Jung, W.**, & Taflanidis, A. A. (2024). Adaptive formulation for probabilistic storm surge predictions through sharing of numerical simulation results across storm advisories. *Coastal Engineering*, 104618.
- **Jung, W.**, Taflanidis, A. A., Kyprioti, A. P., & Zhang, J. (2024). Adaptive multi-fidelity Monte Carlo for real-time probabilistic storm surge predictions. *Reliability Engineering & System Safety*, 247, 109994.
- **Jung, W.**, Taflanidis, A. A., Nadal-Caraballo, N. C., Yawn, M. C., & Aucoin, L. A. (2023). Regional storm surge hazard quantification using Gaussian process metamodeling techniques. *Natural Hazards*, 1-29.
- **Jung, W.**, Taflanidis, A. A., Kyprioti, A. P., Adeli, E., Westerink, J. J., & Tolman, H. (2023). Efficient probabilistic storm surge estimation through adaptive importance sampling across storm advisories. *Coastal Engineering*, 183, 104287.
- **Jung, W.**, Kyprioti, A. P., Adeli, E., & Taflanidis, A. A. (2023). Exploring the sensitivity of probabilistic surge estimates to forecast errors. *Natural Hazards*, 115(2), 1371-1409.
- **Jung, W.**, & Taflanidis, A. A. (2023). Efficient global sensitivity analysis for high-dimensional outputs combining data-driven probability models and dimensionality reduction. *Reliability Engineering & System Safety*, 231, 108805.

PRESENTATIONS

- **Jung, W.** & Taflanidis, A. A. (2024, May 28 – 31) *Selection of storm ensembles consistent with storm surge hazard maps across large geographic regions*, ASCE Engineering Mechanics Institute 2024 Conference, Chicago, IL, United States.
- **Jung, W.**, Taflanidis, A. A. (2024, February 27 – March 1) *Adaptive Multi-Fidelity Monte Carlo for Realtime Storm Surge Hazard Quantification*, Trieste, Italy
- **Jung, W.**, Taflanidis, A. A., & Kyprioti, A. P. (2023, July 9 – 13) *Adaptive importance sampling for efficient probabilistic storm surge estimation*, 14th International Conference on Applications of Statistics and Probability in Civil Engineering, Dublin, Ireland.
- **Jung, W.** & Taflanidis, A. A. (2023, June 6 – 9) *Multi-fidelity Monte Carlo for real-time probabilistic storm surge predictions*, ASCE Engineering Mechanics Institute 2023 Conference, Atlanta, GA, United States.
- **Jung, W.** & Taflanidis, A. A. (2022, May 31 – June 3) *Efficient global sensitivity analysis for high-dimensional outputs combining data-driven probability models and dimensionality reduction techniques*, ASCE Engineering Mechanics Institute 2022 Conference, Baltimore, MD, United States.
- **Jung, W.** & Taflanidis, A. A. (2022, September 13 – 17) *Efficient global sensitivity analysis for high-dimensional outputs combining data-driven probability models and principal component analysis*, The 13th International Conference on Structural Safety and Reliability, Shanghai, China.

HONORS, AWARDS & GRANTS

NSF NHERI Computational Symposium Travel Assistant Grant	2025
EMI 2024 Objective Resilience Committee Student Paper Competition Awards	2024
University of Notre Dame Conference Presentation Grant	2024
CERRA Student Recognition Awards	2023
EMI 2023 Probabilistic Methods Committee Student Paper Competition Awards	2023

LEADERSHIP & OUTREACH

President of Earthquake Engineering Research Institute (EERI) student chapter at Notre Dame
Sep 2022 – Aug 2023

Vice president of Earthquake Engineering Research Institute (EERI) student chapter at Notre Dame
Sep 2021 – Aug 2022