Junoh Heo

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https://heojunoh.github.io

Education

Michigan State University, East Lansing, MI, U.S.A.
Ph.D. student in Statistics 2020 - Present
Advisor: Dr. Chih-Li Sung

Chung-Ang University, Seoul, Korea
M.S. in Statistics 2018 - 2020
Advisor: Dr. Wonkuk Kim

B.A. in Statistics 2013 - 2018

Research Interests

Computer experiments, multi-fidelity simulation, uncertainty quantification, probabilistic machine learning, Bayesian optimization, digital twins, with applications in the physical, biological, and engineering sciences.

Publications

7. Mutoh, A., and **Heo, J.**. (2025+). Influence of prior distributions on Gaussian process hyperparameter inference.

6. **Heo, J.**, and Sung, C.-L. (2025+). RNAmf and DNAmf: Recursive and diffusion non-additive emulators with active learning for multi-fidelity simulation in R.

5. **Heo, J.**, Boutelet, R. and Sung, C.-L. (2025+). Diffusion non-additive model for multi-fidelity simulations with tunable precision.

4. **Heo, J.** (2025+). Fast and accurate emulation of complex dynamic simulators.

3. Steensma, A. K., Kaste, J. A. M., **Heo, J.**, Orr , D., Sung, C.-L., Shachar-Hill, Y., and Walker, B. J. (2025). Modeling with uncertainty quantification identifies essential features of a non-canonical algal carbon-concentrating mechanism. *Plant Physiology*, 197(2), kiae629.

2. **Heo, J.** and Sung, C.-L. (2025). Active learning for a recursive non-additive emulator for multi-fidelity computer experiments. *Technometrics*, 67(1), 58-72.

- Winner, INFORMS 2023 Quality, Statistics & Reliability Best Student Paper Competition
- Winner, 2024 ASA SPES + Q&P Student Paper Competition
- Most downloaded paper in Technometrics (2024-2025)

1. **Heo, J.**, Lee, J.Y. and Kim, W. (2020). Bayesian information criterion accounting for the number of covariance parameters in mixed effects models. *Communications for Statistical Applications and Methods*, 27(3), 301-311.

Honors & Awards

- **Research**
  - **Winner**, ASA Student Paper Competition, Sections on Physical and Engineering Sciences (SPES) and Quality and Productivity (Q&P) 2024
  - **Winner**, AISC Outstanding Graduate Student Presentation 2024
  - **Winner**, INFORMS 2023 Quality, Statistics & Reliability Best Student Paper Competition 2023
- **Travel**
  - **FTC Student Travel Award**, Fall Technical Conference 2024
  - **Graduate School Travel Fellowship**, Michigan State University 2024
  - **Student and Early Career Travel Fund**, American Statistical Association 2024
  - **SPES+Q&P Travel Award**, American Statistical Association's Sections on Physical and Engineering Sciences (SPES) and Quality and Productivity (Q&P) 2024
  - **JRC Student Travel Award**, Joint Research Conference on Statistics in Quality, Industry, and Technology 2024
  - **SIAM Student Travel Award**, SIAM Conference on Uncertainty Quantification 2024
  - **COGS Conference Award**, Michigan State University 2023
- **Academic**
  - **Dissertation Completion Fellowship**, Michigan State University 2026

– **Outstanding Scholar Fellowship**, Michigan State University 2024

– **Presidential Award**, The Korean Statistical Society 2019

Presentations

SIAM Conference on Uncertainty Quantification (Invited Talk, Mar 2026). *Diffusion Non-Additive Model for Multi-Fidelity Computer Experiments with Tuning Parameters.*

2025 Joint Statistical Meetings (Invited Talk, Aug 2025). *Diffusion Non-Additive Model for Multi-Fidelity Computer Experiments with Tuning Parameters.*

International Conference on Advances in Interdisciplinary Statistics and Combinatorics 2024 (Invited Talk, Oct 2024). *Active learning for a recursive non-additive emulator for multi-fidelity computer experiments.*

2024 Fall Technical Conference (Invited Talk, Oct 2024). *Active learning for a recursive non-additive emulator for multi-fidelity computer experiments.*

2024 Joint Statistical Meetings (Contributed Talk, Aug 2024). *Active learning for a recursive non-additive emulator for multi-fidelity computer experiments.*

Joint Research Conference on Statistics in Quality, Industry, and Technology (Contributed Talk, Jun 2024). *Active learning for a recursive non-additive emulator for multi-fidelity computer experiments.*

SIAM Conference on Uncertainty Quantification (Invited Talk, Feb 2024). *Active learning for a recursive non-additive emulator for multi-fidelity computer experiments.*

2023 INFORMS Annual Meeting (Contributed Talk, Oct 2023). *Active learning for a recursive non-additive emulator for multi-fidelity computer experiments.*

Software

3. **Heo, J.**, Boutelet, R. and Sung, C.-L. (2025). DNAmf: Diffusion Non-Additive Emulator for Multi-Fidelity Data with Tuning Parameters. R package version 0.1.0.

2. **Heo, J.** (2025). dynemu: Emulation of Dynamic Simulators via One-Step-Ahead Approach. R package version 1.0.2.

1. **Heo, J.** and Sung, C.-L. (2024). RNAmf: Recursive Non-Additive Emulator for Multi-Fidelity Data. R package version 1.1.2.

Mentoring

Chungmin Lee, Undergraduate Student (Yonsei University) 2024 - 2025

Aditya Pendyala, Undergraduate Student (Michigan State University) 2024 - 2025

Academic Services

Review IISE Transactions, Technometrics (2)

Outreach 12th Annual MSU Science Festival Apr 2024

Teaching

Instructor, Michigan State University
STT 200 Statistical Methods 2022 Summer, 2025 Summer

Graduate Teaching Assistant, Michigan State University
STT 200 Statistical Methods 2020F, 2021S, 2021F, 2022F, 2023S, 2023F, 2024F
STT 380 Probability and Statistics for Data Science 2025S, 2025F
STT 801 Design of Experiments 2022S
STT 864 Statistical Methods II 2022S

Graduate Teaching Assistant, Chung-Ang University
Mathematical Statistics I 2018S, 2019S
Mathematical Statistics II 2018F, 2019F
Regression Analysis 2018S, 2019S
Multivariate Statistical Analysis 2018F, 2019F

Tutor, Chung-Ang University
Mathematical Statistics I 2014S