

# HEEJONG BONG

Assistant Professor of Statistics  
Department of Statistics  
Purdue University, West Lafayette, IN, USA  
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## RESEARCH INTERESTS

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Causal inference, Network data analysis, High-dimensional central limit theorem and bootstrap, Graphical models, Ranking from pairwise comparisons

## ACADEMIC POSITIONS

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<b>Purdue University</b> <i>Assitant Professor of Statistics</i>	West Lafayette, IN 8/2025 - Present
<b>University of Michigan</b> <i>Postdoctoral Research Fellow</i> Collaborators: <i>Elizaveta Levina, Ji Zhu and Colin B. Fogarty</i>	Ann Arbor, MI 8/2023 - 8/2025
<b>Carnegie Mellon University</b> <i>Postdoctoral Research Fellow</i> Collaborators: <i>Robert E. Kass, Valérie Ventura, Larry Wasserman, Alessandro Rinaldo and Arun K. Kuchibhotla</i>	Pittsburgh, PA 8/2022 - 8/2023

## EDUCATION

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<b>Carnegie Mellon University</b> <i>Ph.D. in Statistics</i> Dissertation: <i>Discovery of Functional Predictivity across Brain Regions from Local Field Potentials</i> Dissertation advisors: <i>Robert E. Kass and Valérie Ventura</i>	Pittsburgh, PA 8/2017 - 8/2022
<b>Seoul National University</b> <i>B.Sc. in Mathematics</i>	Seoul, Republic of Korea 3/2011 - 2/2017

## PUBLICATIONS

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### Published / Accepted

**Bong, H.**, Kuchibhotla, A. K. & Rinaldo, A. (2025+). Dual Induction CLT for High-dimensional m-dependent Data. *Annals of Statistics*. Accepted.

**Bong, H.**, Ventura, V. & Wasserman, L. (2025). Frequentist Inference for Semi-Mechanistic Epidemic Models with Interventions. *Journal of the Royal Statistical Society Series B: Statistical Methodology*, 87(3), 701-722.

Kass, R. E., **Bong, H.**, Olarinre, M., Xin, Q. & Urban, K. (2023). Identification of Interacting Neural Populations from Multiple-Electrode Recordings. *Journal of Neurophysiology*, 130(3), 475-496.

Urban, K., **Bong, H.**, Orellana, J. & Kass, R. E. (2023). Oscillating neural circuits: Phase, amplitude, and the complex normal distribution. *Canadian Journal of Statistics*, 51(3), 824-851.

**Bong, H.**, Ventura, V. & Wasserman, L. (2023). Heejong Bong, Valerie Ventura and Larry Wasserman's contribution to the Discussion of 'The Second Discussion Meeting on Statistical aspects of the Covid-19 Pandemic'. *Journal of the Royal Statistical Society Series A: Statistics in Society*, 186(4), 645-646.

**Bong, H.** & Rinaldo, A. (2022). Generalized results for the existence and consistency of the MLE in the Bradley-Terry-Luce model. In *International Conference on Machine Learning* (pp. 2160-2177). PMLR. Selected for long presentation.

**Bong, H.**, Liu, Z., Ren, Z., Smith, M., Ventura, V. & Kass, R. E. (2020). Latent dynamic factor analysis of high-dimensional neural recordings. *Advances in Neural Information Processing Systems*, 33, 16446-16456. Poster presented.

**Bong, H.**, Li, W., Shrotriya, S. & Rinaldo, A. (2020). Nonparametric estimation in the dynamic Bradley-Terry model. In *International Conference on Artificial Intelligence and Statistics* (pp. 3317-3326). PMLR. Poster presented.

### Preprints

**Bong, H.**, Fogarty, C. B., Levina, E., & Zhu, J. (2025+). Heterogeneous Treatment Effects under Network Interference: A Nonparametric Approach Based on Node Connectivity. *arXiv preprint:2410.11797*. Under review.

**Bong, H.**, Ventura, V. & Wasserman, L. (2025+). Causal Inference for Epidemic Models. *arXiv preprint:2410.11743*. Under revision.

Liu, Z.<sup>\*</sup>, **Bong, H.**<sup>\*</sup>, Ren, Z., Smith, M. A. & Kass, R. E. (2025+). Simultaneous Inference in Multiple Matrix-Variate Graphs for High-Dimensional Neural Recordings. *arXiv preprint:2410.15530*. Under revision.

**Bong, H.** & Kuchibhotla, A. K. (2025+). Tight Concentration Inequality for sub-Weibull Random Variables with Generalized Bernstein Orlicz norms. *arXiv preprint arXiv:2302.03850*. Under revision.

**Bong, H.**, Ventura, V., Yttri, E. A., Smith, M. A. & Kass, R. E. (2025+). Cross-Population Amplitude Coupling in High-Dimensional Oscillatory Neural Time Series. *arXiv preprint arXiv:2105.03508*. Under revision.

### PRESENTATIONS

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#### Invited Talks

**Korean Statistical Society Winter Conference** Seoul, Korea  
**Korean Statistical Society** 2025  
*Heterogeneous Treatment Effects in Networks: A Non-Parametric Approach Based on Node Connectivity*

**Department of Mathematics, Statistics, and Computer Science** Chicago, IL  
**University of Illinois Chicago** 2025  
*Heterogeneous Treatment Effects in Networks: A Non-Parametric Approach Based on Node Connectivity*

**Department of Computer Science** Chicago, IL  
**University of Illinois Chicago** 2025  
*Causal Inference for Modern Observational Data*

**New Researcher Conference** Nashville, TN  
**Institute of Mathematical Statistics** 2025  
*Heterogeneous Treatment Effects in Networks: A Non-Parametric Approach Based on Node Connectivity*

**American Causal Inference Conference** Detroit, MI  
**Society for Causal Inference** 2025  
*Heterogeneous Treatment Effects in Networks: A Non-Parametric Approach Based on Node Connectivity*

**Department of Mathematics, Statistics Seminar** College Park, MD  
**University of Maryland** 2024  
*Heterogeneous Treatment Effects in Networks: A Non-Parametric Approach Based on Node Connectivity*

**Banff Workshop on Causal Inference and Prediction for Network Data** Banff, AB, Canada  
**Banff International Research Station** 2024  
*Doubly Robust Non-parametric Estimation of Causal Effects under Network Interference*

**International Conference of the ERCIM WG on Computational and Methodological Statistics** Berlin, Germany  
**HTW Berlin, University of Applied Sciences** 2023  
*Tight concentration inequality for sub-Weibull random variables with variance constraints*

**Department of Mathematics** Seoul, Korea  
**Korean Institute for Advanced Study** 2023  
*Dual Induction CLT for High-dimensional  $m$ -dependent Data*

**Department of Brain and Cognitive Sciences** Seoul, Korea  
**Seoul National University** 2023  
*Discovery of functional predictivity across brain regions from local field potentials*

**Center for AI and Natural Sciences** Seoul, Korea  
**Korean Institute for Advanced Study** 2022  
*Discovery of functional predictivity across brain regions from local field potentials*

### Contributed Talks

**Michael Woodroffe Memorial Conference** Ann Arbor, MI  
**University of Michigan** 2023  
*Dual Induction CLT for High-dimensional  $m$ -dependent Data*

**Carnegie Mellon Sports Analytics Conference** Pittsburgh, PA  
**Carnegie Mellon University** 2019  
*Time-Varying Bradley Terry Ranking Model with Penalized Estimation*

**Ninth International Workshop Statistical Analysis of Neuronal Data** Pittsburgh, PA  
**Carnegie Mellon University** 2019  
*Linear Factor Model for Discovering Lead-Lag Relationship between Two Brain Areas*

### AWARDS

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1st Place in Reproducible Research Paper Competition, Carnegie Mellon Sports Analytics Conference 2019  
 Undergraduate Research Project Fellowship, Seoul National University (\$3,000) 2016  
 Korea National Scholarship for Science and Engineering (\$10,000 per year) 2011-2012, 2015-2016

### TEACHING EXPERIENCE

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## Instructor

**Department of Statistics**  
**Purdue University**

West Lafayette, IN  
2025 - Present

Undergraduate level: *Probability*

## Teaching Assistant

**Department of Statistics and Data Science**  
**Carnegie Mellon University**

Pittsburgh, PA  
2017 - 2022

Graduate level: *Advanced Statistical Theory, Intermediate Statistics, Probability and Mathematical Statistics*

Undergraduate level: *Undergraduate Advanced Data Analysis, Probability Theory and Random Processes, Probability Theory for Computer Scientists, Introduction to Probability Theory (2X), Introduction to Statistical Inference*

**Department of Mathematics**  
**Seoul National University**

Seoul, Republic of Korea  
2017

Undergraduate level: *Sets and Mathematical Logics*

## Tutor

**Department of Mathematics**  
**Seoul National University**

Seoul, Republic of Korea  
2015

Undergraduate level: *Calculus for Life Science 1*

**Undergraduate Student Assembly, Department of Mathematics**  
**Seoul National University**

Seoul, Republic of Korea  
2015

Undergraduate level: *Introduction to Mathematical Analysis 1, 2*

## SOFTWARE PACKAGES

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### KECENI

*Kernel Estimation of Causal Effects under Network Interference, Python* 2024

### FreqEpid

*Frequentist Inference for Semi-Mechanistic Epidemic Models with Interventions, Python* 2024

### MMGE

*Multiple Matrix-variate Graph Estimation, R* 2022

### LaDynS

*Latent Dynamic Analysis via Sparse Banded Graphs, Python* 2021

### LDFA-H

*Latent Dynamic Factor Analysis for High-dimensional Time Series, Python* 2020

## SERVICE

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**Department Culture Committee**  
**Department of Statistics, University of Michigan**

Ann Arbor, MI  
2023 - 2025

**Journal Reviewer**

2022 - Present

*Annals of Statistics*

*Statistical Sciences*

*Journal of the American Statistical Association*

*Journal of the Royal Statistical Society, Series B*

*Annals of Applied Statistics (2X)*

*Proceedings of the National Academy of Sciences*