Kyeongwon Lee

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EDUCATION

Ph.D. Candidate, Statistics March 2017 - Current
Department of Statistics, Seoul National University, Korea
- Advisor: Professor Jaeyong Lee
- Thesis (in preparation): Asymptotic analysis of Bayesian neural networks for supervised learning.

Bachelor of Science, Mathematics February 2017
Department of Mathematical Sciences, Seoul National University, Korea

Bachelor of Science, Statistics February 2017
Department of Statistics, Seoul National University, Korea

RESEARCH INTERESTS

Bayesian Statistics, Asymptotic Statistics, High-Dimensional Statistics, Bayesian Computation, Neural Network, Deep Learning, Uncertainty Quantification, Reliable Artificial Intelligence.

HONORS AND SCHOLARSHIP

Top Graduate Student Paper Award
Journal of the Korean Statistical Society Summer Conference, 2023

NeurIPS 2022 Scholar Award
Neural Information Processing Systems, 2022

Award for Excellence in Teaching
Department of Statistics, Seoul National University, 2020
For teaching *Mathematical Statistics*

The Next Generation of Academics in the Field of Fundamental Science (학문후속세대 장학금)
Seoul National University, 2019

RESEARCH PAPERS

ACCEPTED or PUBLISHED
- S. Park, **K. Lee**, D. Jeong, H. Ko, and J. Lee. (2023). Bayesian nonparametric classification for incomplete data with a high missing rate: an application to semiconductor manufacturing data. *IEEE Transactions on Semiconductor Manufacturing*, 36(2), 170-179.
- K. Kim., M. Ma, and **K. Lee*** (2023). Prediction of spatio-temporal AQI data. *Communications for Statistical Applications and Methods*, 30(2), 119-133.

- **K. Lee***, and J. Lee. (2022). Asymptotic properties for Bayesian neural network in Besov space. *Advances in Neural Information Processing Systems*, 35.
- S. Lee, S. Han, S. Park, **K. Lee**, and J. Lee. (2019). Korean speech recognition using deep learning. *The Korean Journal of Applied Statistics*, 32(2), 213-227.

IN-PREPARATION

- K. Lee, S. Jo, **K. Lee**, and J. Lee (2023+). Scalable and optimal Bayesian inference for sparse covariance matrices via screened beta-mixture prior. https://arxiv.org/abs/2206.12773.
- **K. Lee** (2023+). Asymptotic analysis of Bayesian neural networks for supervised learning. PhD Thesis. In preparation.

CONFERENCE PRESENTATIONS

- Asymptotic properties for Bayesian neural network in Besov space
    - 2022 Thirty-sixth Conference on Neural Information Processing Systems
    - 2022 The Asian Regional Section of the International Association for Statistical Computing Interim Conference (Virtual)
    - 2023 Journal of the Korean Statistical Society Summer Conference
- Comparison of end-to-end deep learning models in Korean speech recognition
    - 2018 Eastern Asia Chapter of the International Society for Bayesian Analysis

TEACHING EXPERIENCES

Lecture

Humaiin, Korea 2020 - 2022
- Introduction to Data Science

Fastcampus, Korea 2018 - 2019
- Statistical and Bayesian Inference for Machine Learning

Teaching Assistant 2017 - Current
Korea National Open University, Korea
- Bayesian Data Analysis

Seoul National University, Korea
- Statistics
- Statistics Lab
- Mathematical Statistics
- Theory of Statistics
- Advanced Bayesian Statistics

SNU Statistical Research Institute, Korea
- Data Science with R/Python

RESEARCH PROJECTS

Asymptotic properties and applications of sparse Bayesian neural networks
This work is joint research with Jaeyong Lee, 2018 -.

Bayesian nonparametric classification for incomplete data with a high missing rate
This work is joint research with Daeun Jeong, Heungkook Ko, Sewon Park, and Jaeyong Lee and supported by Samsung Electronics, 2021 - 2023.

Prediction of spatio-temporal air quality index data
This work is joint research with Kyeongeun Kim and Miru Ma, 2021 - 2023.

Korean speech recognition using deep learning
This work is joint research with Suji Lee, Seokjin Han, Sewon Park, and Jaeyong Lee, 2017 - 2019.

NON-RESEARCH PROJECTS

"Statistical/probabilistic research on the risk of defective occurrence during reliability testing and measures to reduce risk by securing additional sampling"
Samsung Electronics Co., Ltd., 2021.

"A Study on the Improvement of Index Preparation Methods for Expansion of Actual Transaction Price Index for the apartment house"
Korea Real Estate Board (한국부동산원), 2020 - 2021.

"De Novo Drug Design Using Deep Generative Models"
This work is presented as a team project of the class 326.739A in the 2018 spring semester and joint research with Seokjin Han, Hyosin Lee, and Seowon Choi, 2018.

SKILLS AND OTHER INFORMATION

Programming Languages
Python, R, Julia, and C++.

Technical Skills

- Computational mathematics frameworks (Rcpp, NumPy, SciPy and JAX)
- Data analysis and visualization (dplyr/pandas and ggplot2/matplotlib)
- Deep learning frameworks (TensorFlow and PyTorch)
- Probablistic programming languages (BUGS/JAGS, Stan and Pyro/NumPyro)
- Documentation (LaTeX) and Web development languages (HTML, CSS and JS/React)

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- `Docker`, `Git` and parallel computing.

Operating Systems

`MacOS`, `Windows` and `GNU/Linux` (`Debian`, `CentOS`, `Arch`).

Extracurricular Activities

- *SNU Computer Study Club (SCSC)*   2022
- *Korean user group for* **Stan** *(Stan Korea)*   2017 - 2020
- *The 58th Student Council of Seoul National University*   2016
- Founder and President of *SNU Industrial Mathematics Club (REPIM)* 2015 - 2016
- Operating Committee of *the 33th Student Council of College of Natural Sciences, Seoul National University*   2014 - 2015
- Founder and President of *the first Student Council of Department of Mathematics, Seoul National University*   2014 - 2015
- *Seoul National University Photography Club (Youngsang)*   2013 - 2018