DongKyu Cho

Personal Website / GitHub / dkcho819@gmail.com / Statistics Ph.D.

Education

Yonsei University Mar. 2021 – Feb. 2023 (*Expected*)
Master of Arts in Statistics and Data Science *Seoul, South Korea*
Total GPA **4.00/4.00**

Yonsei University Mar. 2015 – Feb 2021
B.E. in Industrial Engineering & B.A. in Applied Statistics *Seoul, South Korea*
Total GPA 3.90/4.00 **(Ranked 1^{st})**
· Math & Statistics GPA (upper-division) **4.00/4.00**
· Industrial Engineering GPA (upper-division) **4.00/4.00**

Republic of Korea Army Feb. 2017 – Nov. 2018
Military Service

Awards and Honors

Best Paper (1^{st}) at 2022 Brain Korea Academic Conference, Yonsei University Jul. 2022
Best Paper (1^{st}) at 2022 Summer Academic Conference, Korean Statistical Society Jul. 2022
Graduated with High Honors (Ranked 1^{st}), Yonsei University Feb. 2021
Highest Honors, Yonsei University Fall 2019
Honors, Yonsei University Fall 2015, 2016, Spring 2019, 2020
Brain Korea Scholarships, National Research Foundation of Korea 2021, 2022
Academic Research Fellowship, Yonsei University 2021, 2022
REU Scholarships, Yonsei University Fall 2019
Honors Scholarships, Yonsei University Fall 2016, Fall 2019, Spring 2020, Fall 2020

Publications

Dongkyu Cho, Won Chang, Jaewoo Park, *Fast Compartment Model Calibration using Annealed and Transformed Variational Inference*, submitted to the ***Journal of Computational and Graphical Statistics***, and earned **Best Paper** at the 2022 BK Conference and the 2022 KSS Conference [http://arxiv.org/abs/2211.12200] [GitHub]

Research Experience

Yonsei University Mar. 2021 – Present
Graduate Researcher

- Advised by Dr. Jaewoo Park (Yonsei University) and Dr. Won Chang (Cincinnati University)
- Proposed a novel variational inference method incorporating developments on deep learning, annealing and variable transformations with applications to the compartment model calibration
- Addressed known challenges in variational inference, and demonstrated the proposed work to be a faster method than Bayesian sampling methods while preserving their reliability [http://arxiv.org/abs/2211.12200] [GitHub]
- Culminated in a paper as a first author, gave a presentation at the 2022 Brain Korea Academic Conference, and 2022 Korean Statistical Society Summer Conference, earning **Best Paper Awards**

Yonsei University Aug. 2021 – Present
Graduate Researcher

- Advised by Dr. Jaewoo Park (Yonsei University), Dr. Won Chang (Cincinnati University) and Dr. Yongjoo Cho (Konkuk University)
- Compared methods for causal inference regarding time series data in a conventional framework
- Applied time series neural networks to the ordinal outcome causal inference tasks and time-varying features

Yonsei University Apr. 2022 – Present
Graduate Researcher

- Advised by Dr. Sangwook Kang (Yonsei University)

- Worked with the National Institute of Environmental Research (NIER) in Korea to implement geospatial grid algorithms for the Geostationary Environmental Monitoring Spectrometer (GEMS)
- Implemented algorithms to enhance computational speed and taking uncertainty into account, and presented it at the NIER Conference [GitHub]

Yonsei University Aug. 2021 – Dec. 2021

Undergraduate Researcher

- Advised by Dr. Wonyong Shin (Yonsei University)
- Conducted a study on techniques for deep learning-based network embeddings, and methods for combining deep generative models and explainable AI

Yonsei University Aug. 2019 – Dec. 2019

Undergraduate Researcher

- Advised by Dr. Woojoo Kim (Yonsei University)
- Explored methods to improve Korean natural language processing, contributed to research in topic modeling for patent mining (funded by LG Display), and helped collect Yonsei Cyber Education Community (YSCEC) data
- Devised a method based on LDA topic modeling to build a social listening tool for tracking and analyzing floating data on social media, and was selected for an oral presentation at the 2019 Big Contest [GitHub]

Presentations

Dongkyu Cho, Won Chang, Jaewoo Park "Fast Compartment Model Calibration using Annealed and Transformed Variational Inference". 2022 Brain Korea Academic Conference. June 30, 2022. Yonsei University, Seoul, Republic of Korea (Oral), **Best Paper Awards**

Dongkyu Cho, Won Chang, Jaewoo Park "Fast Compartment Model Calibration using Annealed and Transformed Variational Inference". The Korean Statistical Society Summer Academic Conference 2022 June 24, 2022. Seoul National University, Seoul, Republic of Korea (Poster), **Best Paper Awards**

Dongkyu Cho, Won Chang, Jaewoo Park "Fast Compartment Model Calibration using Annealed and Transformed Variational Inference". 2022 Korean Data Mining Society Summer Conference. August 27, 2022. Yonsei University, Seoul, Republic of Korea (Oral)

Dongkyu Cho, Sangwook Kang "Developing Geospatial Grid Algorithm for GEMS". 2022 National Institute of Environmental Research. November 25, 2022. Yonsei University, Jeju, Republic of Korea (Oral)

Dongkyu Cho, "Deep Generative Models and Statisticians". Brain Korea Academic Seminar. June 15, 2022. Yonsei University, Seoul, Republic of Korea (Oral)

Dongkyu Cho, "Tracking Topics: A new business framework combining LDA Topic Modeling and Card Transactions". Big Contest. October 28, 2019. Yonsei University, Seoul, Republic of Korea (Oral)

Teaching Experience

Yonsei University Mar. 2021 – Present

Teaching Assistant of Dr. Jaewoo Park

- **Deep Learning** : Covered concepts of deep learning theories and models, including convolutional neural networks, recurrent neural networks, and reinforcement learning with Keras implementation
- **Bayesian Methods** : Covered concepts of advanced Bayesian methods, including hierarchical Bayesian models, advanced Markov chain Monte Carlo and Gibbs sampling

Yonsei University Sep. 2021 – Dec. 2021

Teaching Assistant of Dr. Mijung Kim

- **Statistical Methods** : Covered basic concepts of statistical testings, distributions, inferences, and regressions

Skills / Other Info

Programming Languages: **Python**, **R**, SQL, Java
Tools: **PyTorch**, Rcpp, Keras, Tensorflow, Pandas, NumPy
Languages: Korean (Native), English (Fluent)
GRE: V 161 (88%), Q 170 (96%), W 4.0 (57%), **TOEFL**: 108/120 (30/28/24/26, R/L/S/W)

References

Jaewoo Park
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Won Chang
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Division of Statistics and Data Science
University of Cincinnati
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Ick Hoon Jin
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