Beomjo Park

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RESEARCH INTERESTS

I am broadly interested in robust statistical inference which could better accommodate the model misspecification and data corruption. My research lies in associated statistical learning theory and various interdisciplinary applications.

EDUCATION

Aug 2018 – Aug 2023 **Carnegie Mellon University**, Pittsburgh, PA
Ph.D. in Statistics & Data Science
(Co)Advisors: Sivaraman Balakrishnan & Larry Wasserman

Sep 2016 – Aug 2018 **Korea University**, Seoul, Korea
M.Sc. in Statistics
Thesis: Bayesian Hierarchical Time-Varying Mixed Effect Model | Advisor: Taeryon Choi

Mar 2010 – Aug 2016 **Korea University**, Seoul, Korea
B.Sc. in Industrial Management Engineering & B.Ec. in Statistics (Double Major)

RESEARCH EXPERIENCES

May 2022 – Aug 2022 **Data Scientist Intern, Google LLC**, Mountain View, CA
- Quantified the causal effect of Ad quality on user engagement by analyzing YouTube session data.
- Proposed an improved counter metric accounting for the causal structure of user engagement.

Jul 2020 – Present **Graduate Researcher, Carnegie Mellon University**
- Developed universal inference methods for constructing batch and sequential confidence sets accounting for model misspecification and data corruption [6][7].

Jan 2019 – Jul 2021 **Graduate Researcher, Carnegie Mellon University**
- Constructed spatio-temporal heat transport field of global oceans from large-scale autonomous profiling float observations that are partially missing, heterogeneous, and sparsely distributed [1].
- Delivered insight into climatological phenomena by collaborating with domain scientists.

Sep 2016 – Jul 2019 **Graduate Researcher, Korea University**
- Researched hierarchical Bayesian model representations and nonparametric mixture processes.
- Tailored methods to a meta-analysis in medical studies [2] and functional data analysis.
- Implemented and assessed model selection criteria for scalable Variational inference [3][5].
- Enhanced and reviewed the end-user application and built discipline-specific worked examples [4].

Jul 2016 – Dec 2016 **Research Assistant, NCSoft (NLP lab)**, Korea
Extracted key features and importance affecting individual players' seasonal performance by analyzing Korea Baseball Championship historical data with a hierarchical Bayesian latent model.

HONORS AND AWARDS

Aug 2023 Student paper award by Statistical Learning and Data Science Section, American Statistical Association.
Aug 2022 Outstanding intern presentation by YouTube Ads QUADS team, Google LLC.
May 2022 2021-2022 PhD TA of the year by Dept. of Statistics, Carnegie Mellon University.
Nov 2017 SG graduate student paper presentation award (3rd place) by the Korean Statistical Society.
Fall 2015 National Science Scholarship by Korea Student Aid Foundation.
Mar 2011 – Aug 2016 High Honors (with scholarship) by Korea University.

PUBLICATIONS

[1] **Park, B.**, Kuusela, M., Giglio, D. & Gray, A. (2022) Spatio-Temporal Local Interpolation of Global Ocean Heat Transport using Argo Floats: A Debiased Latent Gaussian Process Approach.
To appear in *Annals of Applied Statistics*

[2] Jo, S., **Park, B.**, Chung, Y., Kim, J., Lee, E. & Choi, T. (2021) Bayesian semiparametric mixed effects models for meta-analysis of literature data: An application to cadmium toxicity studies. *Statistics In Medicine*.

[3] Lim, D., **Park, B.**, Nott, D. J., Choi, T., & Xueue, W. (2020) Sparse signal shrinkage and outlier detection in high-dimensional quantile regression with variational Bayes. *Statistics and Its Interface*.

[4] Jo, S., Choi, T., **Park, B.**, & Lenk, P.J. (2019) `bsamGP`: An `R` Package for Bayesian Spectral Analysis Models using Gaussian Process Priors. *Journal of Statistical Software*.

[5] Ong, V. M., Mensah, K. M., Nott, D. J., Jo, S., **Park, B.**, & Choi, T. (2017) A variational Bayes approach to a semiparametric regression using Gaussian process priors. *Electric Journal of Statistics*.

PREPRINTS

[6] **Park, B.**, Balakrishnan, S. & Wasserman, L. (2022) Robust Universal Inference.
► Winner of ASA Statistical Learning and Data Science Student Paper Award.

[7] **Park, B.**, Balakrishnan, S. & Wasserman, L. (2023) Nonparametric Functional Estimation under Contamination.

CONFERENCE PRESENTATIONS

Park, B., Balakrishnan, S. & Wasserman, L. (Aug. 2023) Robust Universal Inference. *JSM*, Toronto, Canada.

Park, B., & Kuusela, M. (Aug. 2020) Spatio-Temporal Local Interpolation for Quantifying Global Ocean Heat Transport from Autonomous Observations. (Contributed Talk) *JSM*, virtual.

Park, B., & Choi, T. (Jul. 2018) Bayesian Hierarchical Varying-coefficient Mixed Model. (Poster session) *The third East Asia Chapter of ISBA Conference*, Seoul, Korea.

Park, B., & Choi, T. (Nov. 2017) Bayesian Multivariate Hierarchical Semiparametric Mixed Model with Gaussian Process Priors. *The Korean Statistical Society Autumn Conference*, Seoul, Korea.
► 3rd place on SG Graduate Student Paper Presentation Award.

TEACHING EXPERIENCES

Teaching Assistant, Carnegie Mellon University
Aug 2018 – Dec 2022: Carnegie Mellon Sports Analytics Camp - Undergrad Research Experience program, Introduction to Statistical Inference (head TA), Advanced Methods for Data Analysis (head TA), Probability and Mathematical Statistics (head TA), Statistical Graphics and Visualization, Statistical Computing.

Teaching Assistant, Korea University
Sep 2016 – Aug 2017: Mathematical Statistics, Research Methods II, Statistical Computing Methods, Elementary Computational Statistics.

LANGUAGES

Languages: English (Proficient), Korean (Native)
Programming: R†, Python, MATLAB, C++
† Current maintainer of `bsamGP` package on CRAN.