Beomseok Seo

Ph.D., Assistant Professor, Dept. of Statistics, Sookmyung Women's University
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EDUCATION

Ph.D., Statistics, **Penn State University**, University Park, PA — Aug 2016 - Aug 2021

- Thesis: Interpretable Statistical Learning: From Hidden Markov Models to Neural Networks.

B.A., Economics & Statistics, **Korea University**, Seoul, Korea — Mar 2005 - Feb 2011

EMPLOYMENT

Assistant Professor, **Sookmyung Women's Univ.**, Dept. of Stat., Seoul, Korea — 2024 - Present

Adjunct Professor, **Sungkyunkwan Univ.**, Dept. of Quant. Applied Econ., Seoul, Korea — 2023 - Present

Adjunct Professor, **Korea Univ.**, Dept. of Stat., Seoul, Korea — 2023 - 2024

Senior Economist, **The Bank of Korea**, Seoul, Korea — 2011 - 2024

- Research Dept., Office of Econ. Modeling & Policy Analysis, Economic Statistics Dept., Financial Markets Dept.

RESEARCH INTERESTS

My research interests include a range of related problems in

- Interpretable statistical modeling and machine learning,
- Natural language processing and text mining,
- Development of statistical tools for addressing economic and financial challenges.

PUBLICATION

* Corresponding author

Jaewon You, **Beomseok Seo***, Junyoung An (2025) " Who Pays When Zombie Firms Persist? Asymmetric Debt Conditions by Credit Rating." Finance Research Letters, 108616.

Jaewon You, **Beomseok Seo*** (2025) "Deposit Competition and Depository Institution Risk: Do Interest Margins Matter?" Emerging Markets Finance and Trade, 1-21.

Beomseok Seo* (2025) "Econometric Forecasting Using Ubiquitous News Text: Text-enhanced Factor Model." International Journal of Forecasting, 41(3), 1055-1072.

Beomseok Seo*, Jia Li (2024) "Explainable machine learning by SEE-Net: closing the gap between interpretable models and DNNs." Scientific Reports, 14, 26302.

Beomseok Seo*, Younghwan Lee, Hyungbae Cho (2024) "Measuring News Sentiment of Korea Using Transformer." Korean Economic Review(SSCI), 40(1), 149-176.

Beomseok Seo*, Lynn Lin, Jia Li (2022) "Mixture of Linear Models Co-supervised by Deep Neural Networks." Journal of Computational and Graphical Statistics, 31(4), 1303-1317.

Beomseok Seo*, Lynn Lin, Jia Li (2021). "Block-wise Variable Selection for Clustering via Latent States of Mixture Models." Journal of Computational and Graphical Statistics, 31(1), 138-150.

Jia Li, **Beomseok Seo**, Lynn Lin (2019) "Optimal Transport, Mean Partition, and Uncertainty Assessment in Cluster Analysis." Statistical Analysis and Data Mining: The ASA Data Science Journal, 12(5), 359-377.

Seung Jun Shin, **Beomseok Seo***, (2024) "Real-Time Private Consumption Prediction Using Big Data." (in Korean). Korean Journal of Applied Statistics, 37(1), 13-38.

Jae Keun Yoo, Yujin Park, **Beomseok Seo***, (2024) "Using Noise Filtering and Sufficient Dimension Reduction Method on Unstructured Economic Data." (in Korean). Korean Journal of Applied Statistics, 37(2), 119-138.

WORK IN PROGRESS

Yuling Chang, **Beomseok Seo** "Using Explainable AI to Envision the Future of Work and the Workforce." Submitted

Beomseok Seo*, Hyungbae Cho, Dongjae Lee "Point and Risk estImation using an enSemble of Models for Nowcasting: Prism-Now." Bank of Korea Working Paper, 2023(27). Submitted

Beomseok Seo* "Industry Monitoring Using AI Algorithm: Analyst Reports Text Mining", Bank of Korea Issue Note, 2023(5). Will be submitted soon

Young Joon Lee, Soohyon Kim, **Beomseok Seo**, Ki Young Park "Measuring Monetary Policy Surprises Using Text Mining: The Case of Korea." Will be submitted soon

* Corresponding author

TEACHING

Statistics & Engineering

- Statistical Methods I (MA in Stat SMU)
- Text Mining and Natural Language Processing (UG in Stat SMU)
- Statistical Machine Learning (UG in Stat SMU)
- Practicum in Statistical Analysis (UG in Stat SMU)
- Introduction to Probability and Stochastic Processes (UG in Engineering PSU)
- Elementary Statistics (UG in Stat PSU)

Economics

- Big Data Analytics in Macroeconomics (MA in Econ SKKU)
- Machine Learning for Finance and Economics (MA in Stat KU)
- Topics in Data Information (MA in Policy Studies KU)

SELECTED CONFERENCE & SEMINAR TALKS

The Korean Statistical Society & Bank of Korea Joint Forum 2025, Seoul *Sep 2025*
Bank of the Lao PDR (BOL), Vientien *July 2025*
Korea Data Analysis Society (KDAS), Seoul *July 2025*
Korea Deposit Insurance Corporation (KDIC), Seoul *Mar 2025*
Korea Development Institute (KDI), Sejong *Jul 2024*
International Symposium on Forecasting (ISF) 2024, Dijon *Jul 2024*
Chung-nam institute (CNI), Gongju *Jun 2024*
Bank of Korea, BOK Friday Lecture, Seoul *Feb 2024*
Czech National Bank (CNB), *Macroeconomic Forecasting Division Seminar*, Prague *Oct 2023*
European Central Bank (ECB), *DG-E Wide Seminar*, Frankfrut *Oct 2023*
Bank for International Settlements (BIS), *IDE and Machine Learning Community*, Basel *Oct 2023*
The Korean Statistical Society & Bank of Korea Joint Forum 2022, Seoul *Sep 2022*
Central Bank Research Association (CEBRA) Conference 2022, Barcelona *Aug 2022*
Korea Information Society Development Institute (KISDI), Seoul *Jun 2022*
The Korean Statistical Society Conference (TKSS) 2022, Seoul *Jun 2022*
Bank of Korea Statistics Forum 2021, Seoul *Nov 2021*
The Korean Statistical Society Conference (TKSS) 2021, Seoul *Nov 2021*

Computational and Financial Econometrics (*CFE*) *2019*, London *Dec 2019*
Joint Statistical Meetings(*JSM*) *2019*, Denver *Jul 2019*
Joint Statistical Meetings(*JSM*) *2018*, Vancouver *Jul 2018*

PROJECTS

A Study on the Selection Criteria for Accounting Fraud Risk in Financial Statement Reviews, Korean Institute of Certified Public Accountants (KICPA) 2025

Development of an AI-Based Open Art Platform for Space-Customized Artwork Recommendation and Installation Integration 2025

Forecasting Exchange Rate Volatility Using Big Data, , National Assembly Budget Office 2025

Early Warning System Construction for Detecting a Bank Run, Korean Deposit Insurance Corporation 2024

Using Noise Filtering and Sufficient Dimension Reduction Method on Unstructured Economic Data, Bank of Korea 2022

Real-Time Private Consumption Prediction Using Big Data, Bank of Korea 2021

PATENTS

Apparatus for Constructing Economic Indicators Based on News Texts, and Method and System for Business Cycle Forecasting Using Text-Based Indicators (10-2022-0059258)

Method and apparatus for training and inference of synchronized explainable neural networks (10-2025-0121763)

LANGUAGES

English, Korean (fluent)

PROGRAMMING LANGUAGES

Python/Tensorflow, R, SQL (advanced), MATLAB, C/C++, CSS (intermediate)

PROGRAMS

Text Indices Hub, *Interactive website*. (Launching initially takes several minutes.)

- Providing Theme Frequency in News Indices (TFNI), Text-based Business Confidence Indicators (TBCI).

Tspoon, *Python modules on PyPI*,

- Time-series pre-processing, period conversion, normalization, visualization, and more

MLM, *Python modules on GitHub*,

- Interpretable non-linear regression or classification based on "Mixture of Linear Models Co-supervised by Deep Neural Networks"

HDclustVS, *R package on GitHub*,

- A Block-wise Variable Selection Method for High-dimensional Clustering via Latent States of Mixture Models

OTclust, *R package on CRAN*,

- Mean Partition, Uncertainty Assessment, Cluster Validation and Visualization Selection for Cluster