

BEOMSEOK SEO

Ph.D., Assistant Professor, Dept. of Statistics, Sookmyung Women's University
Cheongpa-ro 47-gil 100, Yongsan-gu, Seoul, 04310, Rep. of Korea
Email: bsseo.bok@gmail.com
Web: <https://seo-beomseok.github.io>
Github: <https://github.com/seo-beomseok>

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](#).
- Advisor: [Jia Li](#) (Professor of Statistics and Computer Science)

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

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

Beomseok Seo*, (2024+) "[Econometric Forecasting Using Ubiquitous News Text: Text-enhanced Factor Model](#)." International Journal of Forecasting, (SSCI, JCR 3.1%, IF 7.9) In press

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** (2024+) "[Using Explainable AI to Envision the Future of Work and the Workforce.](#)" Submitted

Beomseok Seo* (2023) "[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 (2024+) "Measuring Monetary Policy Surprises Using Text Mining: The Case of Korea." Will be submitted soon

Beomseok Seo*, Hyungbae Cho, Dongjae Lee (2023) "[Point and Risk estimation using an ensemble of Models for Nowcasting: Prism-Now.](#)" Bank of Korea Working Paper, 2023(27). Will be submitted soon

* Corresponding author

WORKING PAPERS

Beomseok Seo*, Younghwan Lee, Hyungbae Cho (2022) "[Machine-Learning-Based News Sentiment Index \(NSI\) of Korea](#)", Bank of Korea Working Paper, 2022(15).

Beomseok Seo* (2021) "[Interpretable Statistical Learning: From Hidden Markov Models to Neural Networks](#)", Penn State University Ph.D Dissertation, State College, PA.

SELECTED CONFERENCE & SEMINAR TALKS

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, Frankfurt	Oct 2023
Bank for International Settlements (BIS), Meeting with 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
Korea University Dept. of Statistics, Seoul	May 2022
Workshop on Data-Driven Future Prediction Policy Support Model Research by the Society for Economic, Humanities, and Social Studies, Seoul	May 2022
Bank of Korea Statistics Forum 2021, Seoul	Nov 2021
The Korean Statistical Society Conference (TKSS) 2021, Seoul	Nov 2021
Ewha Womans University Dept. of Statistics 2021, Seoul	Oct 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
50th Anniversary Conference of the Statistics Dept., State College	May 2018

EMPLOYMENT

Assistant Professor, Sookmyung Women's University, Seoul, Korea

- **Dept. of Statistics,** Sep 2024 - Present

Senior Economist, The Bank of Korea, Seoul, Korea

- **Research Dept., Office of Economic Modeling and Policy Analysis,** Feb 2023 - Aug 2024
- **Statistics Research Unit,** Jun 2021 - Jan 2023
- **Economic Statistics Dept., National Expenditure Statistics Team,** Feb 2013 - Jun 2016
- **Financial Markets Dept.** Jan 2011 - Feb 2013

Adjunct Professor,

- **Dept. of Quantitative Applied Economics, Sungkyunkwan Univ., Seoul** Sep 2023 - Present
- **Dept. of Statistics, Korea Univ., Seoul** Sep 2023 - Sep 2024

Researcher, Pennsylvania State University, State College, PA

- **Dept. of Statistics,** Summer 2018, Summer 2020, & Summer 2021
- **Smeal College of Business,** Summer 2020
- **Dept. of Political Science,** Summer 2017

Korea Army, Paju, Korea

Aug 2006 - Jul 2008

ADDITIONAL POSITIONS

Committee Member of the Recruitment Exam for the Bank of Korea. 2021

Committee Member of Real-Time Economic Diagnosis for the Korea Development Institute. 2024

TEACHING EXPERIENCE

Statistics & Engineering

- *Sookmyung Women's University, Seoul*
 - Statistical Methods I (MA in Statistics), Fall 2024
 - Practicum in Statistical Analysis (UG in Statistics), Fall 2024
- *Korea University, Seoul*
 - STA830, Machine Learning for Finance and Economics (MA in Statistics), Fall 2023
- *Penn State University, State College, PA*
 - STAT200, Elementary Statistics (UG in Statistics), Summer 2019, Summer 2021
 - STAT418, Introduction to Probability and Stochastic Processes (UG in Engineering), Spring 2020

Economics

- *Korea University, Seoul*
 - PSF632, Topics in Data Information (MA in Policy Studies), Spring 2024
- *Sungkyunkwan University, Seoul*
 - QAE5009, Big Data Analytics in Macroeconomics (MA in Economics), Fall 2023

FELLOWSHIPS, HONORS, AND AWARDS

<i>Excellent Employee Award for Research</i> from The Bank of Korea.	<i>Jun 2023</i>
<i>Teaching Fellowship</i> offered by Penn State Univ.	<i>Spring 2017 - Spring 2021</i>
<i>Best Poster Award</i> of The Statistics Dept. at Penn State Univ.	<i>May 2018</i>
<i>Graduate Study Fellowships</i> awarded by The Bank of Korea.	<i>Fall 2016 - Spring 2018</i>
<i>Best Honors Scholarship</i> in Korea University Dept. of Economics.	<i>Fall 2010</i>
<i>Academic Excellence Scholarship</i> in Korea University Dept. of Economics.	<i>Spring 2006, Fall 2009, Spring 2010</i>

ADDITIONAL TRAINING EXPERIENCE

Barcelona Graduate School of Economics, Summer School, Barcelona - Time Series Vector Auto Regressive Models	<i>Jul 2014</i>
IMF, Singapore Regional Training Institute, Singapore - Financial Markets and Instruments	<i>Dec 2012</i>
Advanced Mathematics Program of The Bank of Korea Academy, Seoul - Stochastic Process, Real Analysis, Differential Equations	<i>Mar 2012 - Dec 2015</i>

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