

## Jun Song

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### CONTACT INFORMATION

Department of Statistics, Korea University  
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### EDUCATION

**The Pennsylvania State University**, University Park, PA.

Ph.D. in Statistics, August 2012 – August 2017.

- Adviser: Professor Bing Li.

**Seoul National University**, Seoul, Korea.

B.S. in Statistics, February 2011.

B.S. in Mathematical Sciences, February 2011.

### ACADEMIC POSITIONS

**Korea University**, Seoul, Korea.

Associate Professor, Department of Statistics, September 2022 – Present.

Assistant Professor, Department of Statistics, September 2021 – August 2022.

**The University of North Carolina at Charlotte**, NC.

Assistant Professor, Department of Mathematics and Statistics, August 2017 – June 2021.

Affiliated Faculty, School of Data Science, August 2020 – June 2021.

### RESEARCH INTERESTS

Sufficient Dimension Reduction, Functional Data Analysis, Data Privacy, Synthetic Data Generation, Federated Learning, ML & DL.

### PEER-REVIEWED ARTICLES

\*: Corresponding Author. †: Student supervised

#### Accepted or Published :

Shanshan Wang, Eliana Christou, Eftychia Solea, **Jun Song\***. (2026). Nonlinear Sufficient Dimension Reduction for Conditional Quantiles in Scalar-on-Function Single-Index Models. *Statistics and Computing*. Accepted.

Kyongwon Kim, **Jun Song\*** and Jae Keun Yoo. (2026). Valid asymptotic inference after sufficient dimension reduction in a single-index framework. *Statistics and Computing*. Accepted.

Sehun Jang<sup>†</sup> and **Jun Song\***. (2025). Functional adaptive group lasso with its non-asymptotic bounds. *Electronic Journal of Statistics*, 19(2), 3927-3954.

Shanshan Wang, Eliana Christou, Eftychia Solea, and **Jun Song\***. (2025+). Dimension Reduction for the Conditional Quantiles of Functional Data with Categorical Predictors. *Biometrical Journal*. Accepted.

Eliana Christou, Eftychia Solea, Shanshan Wang, and **Jun Song\***. (2027). Sufficient Dimension Reduction for the Conditional Quantiles of Functional Data. *Statistica*

*Sinica*. Accepted.

SeungBeom Hong<sup>†</sup>, Ilmun Kim, and **Jun Song\***. (2024). Enhancing Sufficient Dimension Reduction via Hellinger Correlation. *Proceedings of the 41st International Conference on Machine Learning*, PMLR 235:18634-18647, 2024. (ICML 2024).

Eftychia Solea, Eliana Christou, and **Jun Song\***. (2026). Robust Inverse Regression for Multivariate Elliptical Functional Data. *Statistica Sinica*. Accepted.

Sehun Jang<sup>†</sup> and **Jun Song\***. (2024). A selective review of nonlinear sufficient dimension reduction. *Communications for Statistical Applications and Methods*, 31(2), 247-262.

**Jun Song**, Kyongwon Kim, and Jae Keun Yoo. (2023). On a Nonlinear Extension of the Principal Fitted Component Model. *Computational Statistics and Data Analysis*. 182, 107707.

Chuqin Li, Alexis Jordan, **Jun Song**, Yaorong Ge, and Albert Park. (2022). A Novel Approach to characterize State Level food environment and Predict Obesity Rate Using Social Media Data. *Journal of Medical Internet Research*. 24(12), e39340.

Ali Mahzarnia<sup>†</sup> and **Jun Song\***. (2022). Multivariate functional group sparse regression: Functional predictor selection. *PLoS ONE*, 17(4), e0265940.

Bing Li and **Jun Song**. (2022). Dimension reduction for functional data based on weak conditional moments. *The Annals of Statistics*. 50(1), 107-128.

**Jun Song** and Kyongwon Kim. (2022). Sparse Multivariate Functional Principal Component Analysis. *Stat.* 11, e435.

Paul H. Jung<sup>†</sup> and **Jun Song\***. (2022). Multivariate Neighborhood Trajectory Analysis: An Exploration of the Functional Data Analysis Approach. *Geographical Analysis*. 54(4), 789-819.

**Jun Song\*** and Bing Li. (2021). Nonlinear and additive principal component analysis for functional data. *Journal of Multivariate Analysis*, 181, 104675.

**Jun Song\***. (2019). On sufficient dimension reduction for functional data: Inverse moment based methods. *Wiley Interdisciplinary Reviews: Computational Statistics*. 11, e1459.

Holly Holt, Gabriel Villar, Weiyi Cheng, **Jun Song**, and Christina Grozinger. (2018). Molecular, physiological and behavioral responses of honey bee (*Apis mellifera*) drones to infection with microsporidian parasites. *Journal of invertebrate pathology*. 155, 14-24.

Bing Li and **Jun Song**. (2017). Nonlinear sufficient dimension reduction for functional data. *The Annals of Statistics*. 45(3), 1059-1095.

#### Papers Under Review :

Sehun Jang<sup>†</sup> and **Jun Song\***. Interaction-Aware Nonlinear Scalar-on-Function Regression with Functional Predictor Selection via Adaptive RKHS.

- RS-2025-16072854 (PI: Jun Song)  
National Research Foundation of Korea  
Pilot and Feasibility Grant (개척연구)  
Period: 2025–2028  
Title: Functional Data-based Black Box Model Ensemble: Integrating Interpretability and Distributed Learning  
Role: Principal Investigator
- RS-2023-00219212 (PI: Kyoung Hee Kim)  
National Research Foundation of Korea  
Basic Research Lab (기초연구실)  
Period: 2023–2026  
Title: Statistical theories and methodologies on data having intrinsic structure  
Role: Co-Investigator (20%)
- 2022M3J6A1063595 (PI: Hwan Chung)  
Ministry of Science and ICT (MSIT) of Korea  
Developing Convergence Talent in Data Science (인재양성)  
Period: 2022–2029  
Title: DS Plus-Data Science Education Program for Next-Generation Convergence  
Talent Role: Co-Investigator
- NRF-2022R1C1C1003647 (PI: Jun Song)  
National Research Foundation of Korea  
Young Scientist Grants (Outstanding Track, 우수신진연구)  
Period: 2022–2027  
Title: Interpretable Statistical Methodology for Big Data of Complex Structure  
Role: Principal Investigator

#### HONORS AND AWARDS

##### **The University of North Carolina at Charlotte**

- Faculty Research Grant Award, 2018–2019.

##### **The Pennsylvania State University**

- William Harkness Teaching Award, 2016.
- Jack and Eleanor Pettit Scholarship in Science, 2016.
- William Harkness Travel Award for JSM Seattle, 2015.
- August and Ruth Homeyer Graduate Fellowship, 2012–2013.
- University Graduate Fellowship, 2012–2013.

##### **Seoul National University**

- Brain Korea 21 Fellowship, Korea, 2011–2012.

##### **Korea Science and Engineering Foundation**

- National Science and Technology Scholarship, Korea, 2004–2010.

TEACHING  
EXPERIENCE

**Korea University**, Seoul, Korea

- DAS 512, Principles of Statistical Learning II, Summer 2024, Fall 2025.
- DAS 511, Principles of Statistical Learning I, Spring 2024, Summer 2025.
- STA 829, Topics in Applied Statistics I (Functional Data Analysis), Fall 2023.
- STA 617, Advanced Statistical Machine Learning, Fall 2021, Spring 2025.
- STA 518, Statistical Methodology for Data Analysis, Fall 2022.
- STAT 424, Statistical Machine Learning, Fall 2023, Fall 2025.
- STAT 433, Statistical Modeling for Deep Learning, Spring 2022.
- STAT 221, Introduction to Probability Theory, Spring 2022, Fall 2022, Spring 2023, Spring 2024, Spring 2025.
- STAT 232, Mathematical Statistics, Fall 2021.
- Workshop (8 hours), R을 이용한 기초 통계학, Feb. 2022, Summer 2022.
- Workshop (8 hours), 로지스틱 회귀분석, Summer 2022.
- Bootcamp (10 hours), R & Python, Feb. 2023, Feb. 2024.

**The University of North Carolina**, Charlotte, NC.

- STAT 7133 / 8133, Multivariate Analysis, Spring 2018, Spring 2019.
- STAT 6115 / DSBA 6115, Statistical Learning with Big Data, Fall 2018, Fall 2019, Fall 2020.
- STAT 3122 / MATH 3122, Probability and Statistics I, Spring 2019.
- STAT 2122, Intro to Probability and Statistics, Spring 2020, Fall 2020, Spring 2021.
- STAT 1222, Introduction to Statistics, Fall 2017, Summer 2018, Summer 2019.
- STAT 1221, Elements of Statistics I, Fall 2017, Fall 2018, Fall 2019, Spring 2020.

**The Pennsylvania State University**, University Park, PA.

- STAT 414 / MATH 414, Introduction to Probability Theory, Summer 2015, 2016.
- STAT 318 / MATH 318, Elementary Probability, Fall 2015, Spring 2016.

STUDENTS  
RESEARCH  
SUPERVISION

**Korea University**, Seoul, South Korea.

**Current Students**

- Current Ph.D. student: Sehoon Jang, Dabeen Kim
- Current M.S. student: Seung Won Chung, Kibum Kim, Noa Jeong, Jiho Choi, Nahyun Han, Minah Kim, Siho Yun, Joonseo Kwon

**Former Students**

- Yerim An (M.S. in August 2025)  
Thesis: Integrating Self-Attention into MLP-Based Architectures for Improved Multivariate Time Series Forecasting

- Hwijin Seo (M.S. in August 2025)  
Thesis: Extracting Multi-Index Structures from Single-Index Hellinger Correlation Based Sufficient Dimension Reduction
- Donghoon Lee (M.S. in February 2025)  
Thesis: Functional Data Synthesis Using Adaptive Basis and Latent Space Diffusion in VAE
- Sumin Jeon (M.S. in February 2025)  
Thesis: Improving Multivariate Time Series Forecasting Accuracy with Weighted PatchTST for Further Prediction
- Dongcheol Shin (M.S. in August 2024)  
Thesis: A Unified Framework for Synthetic Data Generation of Tabular Data via Self-Attention
- Dong Hyun Kang (M.S. in August 2024)  
Thesis: Synthetic data generation via distorted principal loadings : Application to data integration
- Yujin Hwang (M.S. in August 2024)  
Thesis: Nonparametric Variable Selection for Mixed Model
- Seungbeom Hong (M.S. in February 2024)  
Thesis: Enhancing Sufficient Dimension Reduction via Hellinger Correlation
- Dongkwun Yoo (M.S. in February 2024).  
Thesis: Progressive Folded-MAVE
- Younghun Ko (M.S. in February 2024)  
Thesis: Penalized neural network sufficient dimension reduction

**The University of North Carolina**, Charlotte, NC.

- Ali Mahzarnia (Ph.D. in 2021, first job: Postdoctoral Researcher at Duke University)
- Tanmay Kenjale (B.S. Honor's thesis in December 2021)
- Avery Johnson (M.S. in May 2021)
- Ruari Swift-christian (B.S. in May 2020)
- Wei Zhang (M.S. in December 2018)

## CONFERENCE TALKS

### Invited Talks

- Interaction-Aware Nonlinear Scalar-on-Function Regression with Variable Selection via Adaptive RKHS, *ICSDS 2025*, Seville, Spain, December 2025.
- Sparse modeling and non-asymptotic bounds via correlation operator of multivariate functional data, *EcoSta 2024*, Beijing, China, July 2024.
- On correlation operator for multivariate functional data and sparse modeling with non-asymptotic bounds, *Conference of the Korean Statistical Society*, Seoul, South Korea, July 2024.
- Advances in functional predictor selection with its nonasymptotic bounds, *IMS-APRM 2024*, Melbourne, Australia, January 2024.

- Functional predictor selection and its nonasymptotic behavior, *EcoSta 2023*, Tokyo, Japan, August 2023.
- Functional sufficient dimension reduction via weak conditional expectation, *Conference of the Korean Statistical Society*, Jeju, South Korea, December 2022.
- Sufficient dimension reduction for multivariate functional data, *Japanese Joint Statistical Meeting*, Tokyo, Japan, September 2022 (virtual).
- Functional Group Lasso with Functional Predictor Selection, *Joint Statistical Meetings 2022*, Washington D.C., August 2022.
- Functional sparse group lasso, *EcoSta 2022*, Kyoto, Japan, June 2022 (virtual).
- Functional group sparse regression: functional predictor selection, *Young Statistician's Meeting*, Incheon, South Korea, December 2021.
- Functional sufficient dimensions reduction via weak conditional moments, *World Congress in Probability and Statistics*, Seoul, South Korea, July 2021.
- Functional sufficient dimensions reduction via weak conditional moments, University of Illinois at Chicago, Online, November 2020.
- On sufficient dimension reduction for functional data, *Joint Statistical Meetings*, Virtual meeting, August 2020.
- On sufficient dimension reduction for functional data, *CMStatistics 2019*, London, UK, December 2019.
- Nonlinear dimension reduction for functional data, University of Nevada at Reno, October 2019.
- Nonlinear dimension reduction for functional data, George Mason University, October 2019.
- Nonlinear and additive principal component analysis for functional data, Korea University, Seoul, South Korea, July 2019.
- Nonlinear and additive principal component analysis for functional data, *EcoSta 2019*, Taichung, Taiwan, June 2019.
- Nonlinear and additive principal component analysis for functional data, *ICSA Applied Statistics Symposium*, Raleigh, North Carolina, June 2019.
- Nonlinear multivariate functional PCA, *Joint Statistical Meetings*, Vancouver, Canada, July 2018.
- Nonlinear multivariate functional PCA, *Conference of the Korean Statistical Society*, Busan, South Korea, May 2018.
- Nonlinear dimension reduction for functional data: supervised v.s. unsupervised, University of Kentucky, Lexington, Kentucky, March 2018.
- Dimension reduction for functional data, *ICSA Applied Statistics Symposium*, Chicago, Illinois, July 2017.
- Dimension reduction for functional data, Southern Methodist University, Dallas, Texas, February 2017
- Dimension reduction for functional data, University of North Carolina, Charlotte, North Carolina, February 2017

- Dimension reduction for functional data, Bowling Green State University, Bowling Green, Ohio, February 2017
- Dimension reduction for functional data, Miami University, Oxford, Ohio, January 2017
- Dimension reduction for functional data, University of Minnesota, Minneapolis, Minnesota, January 2017

### Contributed Talks

- On sufficient dimension reduction for functional data, *The Joint Statistical Meetings*, Chicago, Illinois, July 2016.
- Nonlinear sufficient dimension reduction for functional data, *The Joint Statistical Meetings*, Seattle, Washington, August 2015.

### PROFESSIONAL MEMBERSHIP AND SERVICES

- Member of the American Statistical Association.
- Member of the Korean Statistical Society.
- 서울시 통계분야 자문위원. 2024 – 2027
- Session organizer, *EcoSta 2024*, Beijing, China, July 2024.
- External reviewer for *the Research Grants Council of Hong Kong*, 2018 – 2021.
- Reviewer for the following journals: (not updated since 2022)  
*Annals of Statistics*, *Journal of the American Statistical Association*, *Journal of the Royal Statistical Society: Series B*, *Biometrika*, *Journal of Computational and Graphical Statistics*, *Journal of Multivariate Analysis*, *Statistica Sinica*, *Statistics and Computing*, *Statistics in Medicine*, *Statistics and Probability Letters*, *Stat*, *Annals of the Institute of Statistical Mathematics*, *Statistical Analysis and Data Mining*, *Wiley Interdisciplinary Reviews: Computational Statistics*, *Journal of System Science and Complexity*, and *Journal of Business & Economic Statistics*.
- Co-organizer, *The October Math Day Symposium*, Charlotte, NC, October 2020.
- Session organizer, *CMStatistics 2021*, London, UK, December 2021.
- Committee of Data Science and Business Analytics Graduate Curriculum, School of Data Science, UNC Charlotte, 2020 – 2021.

### OTHER SERVICES AND EXPERIENCES

- Local Committee of National Math and Science Competition, KSEA, 2018–2021.
- Peer advisor for new Ph.D. students in Statistics, The Pennsylvania State University, 2014.
- Graduate Student Consultant, Statistical Consulting Center, The Pennsylvania State University, Fall 2013, Spring 2014.
- Graduate studies, Department of Statistics, Seoul National University, 2011 – 2012.
- Mentor for students in College of Liberal Studies, Seoul National University, 2010 – 2011.
- Research Assistant, The Bank of Korea, Seoul, Korea, Oct. 2008–Nov. 2008.

- Research Assistant, The Boston Consulting Group, Seoul, Korea, Aug. 2008–Sep. 2008, and Dec.2008.
- Excellent Undergraduate Tutor, Department of Mathematical Sciences, Seoul National University, Spring, 2008.
- (Mandatory) Military Service, Sergeant, Republic of Korea Army, Feb. 2005 – Feb. 2007.