

# Young Geun Kim

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## Employment

Mar. 2025 – Feb. 2026

**Postdoctoral researcher**, Yonsei University.

Developing econometric models for matrix-valued time series

Basic research laboratory, Department of Statistics and Data Science.

## Education

Mar. 2019 – Feb. 2025

**Ph.D. in Statistics**, Sungkyunkwan University, Seoul.

Dissertation: *Bayesian Modeling and Forecasting of High Dimensional Long Range Dependent Time Series*.

Advisor: *Changryong Baek*.

Graduate Merit Scholarship (2019 – 2021)

Mar. 2013 – Feb. 2019

**B.Ec. in Statistics**, Sungkyunkwan University, Seoul.

Masters and Doctors Connected Track Scholarship (2018), Dean's List (2014 – Spring 2015), Academic Excellence Scholarship (Fall 2013, 2017)

## Research Interests

**High-dimensional time series**

High-dimensional time series analysis/forecasting.

**Long-range dependence**

Vector heterogeneous autoregressive (VHAR) model.

**Bayesian econometrics**

Large Bayesian VARs, dynamic factor models.

**Anomaly detection**

Time series anomaly detection.

## Research Publications

### Journal Articles

- 1 **Y. G. Kim** and C. Baek, “Bayesian vector heterogeneous autoregressive modeling,” *Journal of Statistical Computation and Simulation*, vol. 94, no. 6, pp. 1139–1157, 2024. [DOI](#): 10.1080/00949655.2023.2281644.


### Conference Proceedings

- 1 J.-H. Yun, J. Kim, W.-S. Hwang, **Y. G. Kim**, S. S. Woo, and B.-G. Min, “Residual size is not enough for anomaly detection: Improving detection performance using residual similarity in multivariate time series,” in *Proceedings of the 37th ACM/SIGAPP Symposium on Applied Computing*, ser. SAC '22, Virtual Event: Association for Computing Machinery, 2022, pp. 87–96, ISBN: 9781450387132. [DOI](#): 10.1145/3477314.3506990.
- 2 **Y. G. Kim**, J.-H. Yun, S. Han, H. C. Kim, and S. S. Woo, “Revitalizing self-organizing map: Anomaly detection using forecasting error patterns,” in *ICT Systems Security and Privacy Protection*, A. Jøsang, L. Fitcher, and J. Hagen, Eds., Cham: Springer International Publishing, Jun. 2021, pp. 382–397, ISBN: 978-3-030-78120-0. [DOI](#): 10.1007/978-3-030-78120-0\_25.

### Workshops & Posters

- 1 J. Cho, S. Tariq, S. Lee, **Y. G. Kim**, J.-H. Yun, J. Kim, H. C. Kim, and S. S. Woo, *Contextual anomaly detection by correlated probability distributions using kullback-leibler divergence*, 5th Workshop on Mining and Learning from Time Series, held in conjunction with KDD'19, Anchorage, Alaska, USA, Aug. 2019. [URL](#): [https://milet19.github.io/papers/milet19\\_poster\\_6.pdf](https://milet19.github.io/papers/milet19_poster_6.pdf).

## Patents

- 1 S. S. Woo and Y. G. Kim, "Apparatus and method for detecting outliers in cyber-physical systems," 1 026 080 180 000, Nov. 2023.  DOI: <https://doi.org/10.8080/1020220003261>.

## Presentations

- August 2025 **Bayesian Modeling and Forecasting of High-Dimensional Long-Range Dependent Time Series** ESOBE (European Seminar on Bayesian Econometrics) 2025  
University of Melbourne, Australia  
Poster session.
- July 2024 **Bayesian Vector Heterogeneous Autoregressive Modeling** KSS Summer 2024  
Department of Statistics at Sungkyunkwan University, Seoul, Korea  
Student session.
- June 2021 **Revitalizing self-organizing map: Anomaly detection using forecasting error patterns** IFIP SEC 2021  
Department of Informatics at the University of Oslo, Oslo, Norway (Virtual)  
Session 11: Machine Learning for Security

## Research Projects

- Mar. 2025 – Feb. 2026 **Bayesian modeling and forecasting of tensor-valued time series** PI: Taeyoung Park, Yonsei University, Seoul.  
Developed Bayesian econometric time series models for matrix-valued time series.
- Jun. 2019 – Feb. 2025 **Bayesian approaches to high-dimensional long-range dependent time series**  
Time series Lab (PI: Changryong Baek), Sungkyunkwan University, Seoul.  
Developed Bayesian Vector Heterogeneous Autoregressive (BVHAR) models.
- Apr. 2019 – Feb. 2020 **Anomaly detection in cyber-physical systems** National Security Research Institute  
DASH Lab (PI: Simon S. Woo), Sungkyunkwan University, Suwon.  
Developed reconstruction-based anomaly detection algorithm.

## Teaching Assistanship

### Off-campus

- Aug. 2023 and May. 2024 **Time Series Analysis and its Applications** The University of Samsung Electronics.  
TA to time series analysis course - included in data science track - for Samsung Electronics employees. Held PyTorch Lab for time series forecasting.
- Nov. 2020 – Dec. 2020 **Data Analysis and Modeling 2** SKK GSB AI MBA, Seoul.  
TA to Time series analysis course for KB bank employees.

### On-campus

- Mar. 2020 – Jun. 2020 **Recent Advances in Applied Statistics (STA5037)** Statistics, Sungkyunkwan University, Seoul.  
**Introduction to Time Series Analysis (STA3001)** Statistics, Sungkyunkwan University, Seoul.  
**Insurance Statistics (STA3018)** Statistics, Sungkyunkwan University, Seoul.

## Teaching Assistanship (continued)

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Sep. 2019 – Dec. 2019	<b>Mathematics for Statistics (STA2008)</b> Statistics, Sungkyunkwan University, Seoul.
May 2019 – Jun. 2019	<b>Matrix algebra for Statistics (STA2017)</b> Statistics, Sungkyunkwan University, Seoul.

## Skills

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R	CRAN package bvhar: Bayesian econometrics toolkit for multivariate time series
C++	Eigen, boost, and OpenMP (used in bvhar)
Python	Pybind11: bvhar for Python Anomaly detection module: somanomaly