Young Geun Kim

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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*.
Mar. 2013 – Feb. 2019	**B.Ec. in Statistics**, Sungkyunkwan University, Seoul.

Research Interests

High-dimensional time series	High-dimensional time series analysis/forecasting.
Long-range dependence	Vector heterogeneous autoregressive (VHAR) model.
Bayesian econometrics	Bayesian vector autoregressive (BVAR) 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. Futcher, 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://milets19.github.io/papers/milets19_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.

Research Projects

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

Jul. 2024 – Sep. 2024	**Manufacturing solution division data boot-campus** Hyundai NGV. Mentored Hyundai motor group employee's data boot-campus personal projects.
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.
Sep. 2019 – Dec. 2019	**Mathematics for Statistics (STA2008)** Statistics, Sungkyunkwan University, Seoul.
May 2019 – Jun. 2019	**Matrix algebra for Statistics (STA2017)** Statistics, Sungkyunkwan University, Seoul.