

Taehyoung Kim

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Education

Seoul National University (SNU) , Seoul, South Korea	Mar. 2020 – Aug. 2026 (Expected)
<i>Military Leave of Absence</i>	Mar. 2022 – Dec. 2023
B.S. in Statistics and Mathematical Science	
◦ Upper-level/Graduate Major: 4.19/4.30	
Sejong Science High School , Seoul, South Korea	Mar. 2018 – Feb. 2020
<i>Early Graduation after 2 years</i>	
◦ Ranking: Top 7%(11/164) in a specialized STEM high school.	

Research Interests

Statistical Learning Theory, Machine Learning, High-dimensional Dependent/Structured Data

Publications

- [1] **T. Kim**, S. Hwang, and J. Park. “FDR Control via Neural Networks under Covariate-Dependent Symmetric Nulls ↗.” *arXiv preprint arXiv:2511.15495*. Submitted to *Biometrics*. 2025.
- [2] J. Ahn, **T. Kim**, D. Park, and J. Kim. “Subsampling Confidence Bound for Persistence Diagrams via Time-delay Embedding”. In preparation for submission to *International Symposium on Computational Geometry (SoCG)*, 2026.

Research Experience

Undergraduate Intern, High-Dimensional Multiple Testing Lab

Advisor: Junyong Park ↗ (Dept. of Statistics, SNU)

Covariate-assisted multiple testing	Jun. 2024 – Nov. 2025
◦ Developed a false discovery rate-controlling procedure under covariate-dependent symmetric nulls. ◦ Proved asymptotic validity of the proposed mean-estimation algorithm. ◦ Improved power by 5% over state-of-the-art methods in simulation studies. ◦ Applied the method to age-specific blood pressure and U.S. air pollution datasets. ◦ Supported by SNU Undergraduate Research Internship. (Research fund of \$500)	

Pythagorean expectation models on multiple sports	Jun. 2021 – Aug. 2021
◦ Explored extensions of Pythagorean expectation models to multiple sports and estimated optimal exponents via MISE. ◦ Derived sport-specific optimal exponents for Pythagorean model that improves predictive accuracy. ◦ Supported by SNU Undergraduate Research Internship. (Research fund of \$500)	

Undergraduate Intern, Topological Data Analysis Lab

Advisor: Jisu Kim ↗ (Dept. of Statistics, SNU)

Periodicity testing for time series

Dec. 2024 – Dec. 2025

- Co-led a project on proposing a novel method to test periodicity in time series.
- Proved asymptotically valid confidence bounds for the one-dimensional homology features.
- Accurately tested non-sinusoidal periodic signals as periodic in simulation experiments.
- Supported by Student-Directed Education Regular Program from SNU. (Research fund of \$500)

Honors and Awards

Kwanjeong Lee Jong-Hwan Scholarship

Mar. 2024 – Dec. 2025

Kwanjeong Lee Jong-Hwan Foundation

- Awarded a competitive scholarship with a \$12,000 annual stipend for distinguished undergraduates.

Undergraduate Mathematics Competition (Gold/Silver)

Dec. 2025 / Dec. 2021, Nov. 2023

Korean Mathematics Society

- Received Gold/Silver Award (Top 8/24, 31) in a national mathematics competition for undergraduates.

Korea Mathematics Olympiad (Silver)

Nov. 2018

Korean Mathematics Society

- Received Silver Award (Top 89) in the Korea Mathematics Olympiad.

Merit-based Scholarship

Aug. 2020

SNU College of Natural Sciences

- Awarded 70% of tuition for outstanding performance during the previous semester.

Dean's List

Aug. 2020, Aug. 2024, Feb. 2025

SNU College of Natural Sciences

- Awarded for outstanding performance during the previous semester.

Professional & Service Experience

Volunteer Tutor, Gwanak Youth Center

Jul. 2021 – Aug. 2021

- Tutored underprivileged middle school students in mathematics (30 hours).

Military Service, ROK Air Force

Mar. 2022 – Dec. 2023

- Served as computer operations specialist.
- Served six months each as squadron lead soldier and peer counselor, coordinating daily operations and providing peer support.

Skills and Test Scores

Technical Skills: (Advanced) R, Python, PyTorch, (Intermediate) MATLAB

Test Scores:

- **TOEFL iBT:** 107 (R29, L30, S23, W25) **May. 2025**
- **GRE General Test:** Quant 170, Verbal 160, AW 4.0 **Aug. 2025**
- **GRE Mathematics Subject Test:** 970 **Sep. 2025**