Taehyoung Kim

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Education

Seoul National University (SNU), Seoul, South Korea **Mar. 2020 – Aug. 2026 (Expected)**
Military Leave of Absence Mar. 2022 – Dec. 2023
B.S. in Statistics and Mathematical Science

- GPA: 4.03/4.30, Major: 4.05/4.30

Sejong Science High School, Seoul, South Korea **Mar. 2018 – Feb. 2020**
Early Graduation after 2 years

- 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:2511.15495, 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**

- Proposed 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

- Full tuition and a $6,000 annual stipend for distinguished undergraduates in a competitive scholarship.

Undergraduate Mathematics Competition: Silver Award **Dec. 2021, Nov. 2023**
Korean Mathematics Society

- Silver Award (Top 15%) in a national mathematics competition for undergraduate students.

Korea Mathematics Olympiad: Silver Award **Nov. 2018**
Korean Mathematics Society

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

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), focusing on introductory statistics and trigonometry.

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
Language: Korean (Native), English (Fluent)
Test Scores:

- TOEFL iBT: 107 (R29, L30, S23, W25)