

RESEARCH INTERESTS

I am generally interested in **interpretable data analysis** with special geometric structures or high dimensionality. As a mathematician, I place a lot of value in providing rigorous and interpretable methods.

During my Ph.D., I have been primarily working on **compositional data analysis**, including variable selection, representation learning, and sufficient dimension reduction via kernel methods. I am also interested in portfolio management in finance, which can also be viewed as compositional data.

Keywords: Compositional data analysis, Kernel methods, Statistical learning, Non-Euclidean data

EDUCATION

Ph.D. candidate in Mathematical Sciences

2018–2024 (expected: Feb)

Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea

Advisors: [Cheolwoo Park](#), [Jeongyoun Ahn](#)

B.S. in Mathematics

2013–2018

Korea University, Seoul, Korea

PUBLICATIONS

1. **Park, J.**, Ahn, J., and Park, C. (2023), Kernel Sufficient Dimension Reduction and Variable Selection for Compositional Data, Proceedings of the 40th International Conference on Machine Learning (**ICML**), accepted
2. Kang, I., Choi, H., Yoon, Y.-J., **Park, J.**, Kwon, S.-S., and Park, C. (2023), Frechet Distance-Based Cluster Analysis for Multi-Dimensional Functional Data, Statistics and Computing, 33(4), 75.
3. **Park, J.**, Yoon, C., Park, C., and Ahn, J. (2022), Kernel Methods for Radial Transformed Compositional Data with Many Zeros, Proceedings of the 39th International Conference on Machine Learning (**ICML**), 162: 17458 - 17472.
<https://proceedings.mlr.press/v162/park22d.html>

TEACHING

• Teaching Assistant at KAIST

- Statistical Data Science Practice (DS516)

Spring 2023

- Probability and Statistics (MAS250)

Fall 2021

- Abstract Algebra I (MAS311)

Spring 2021

- Mathematical Statistics (MAS355)

Fall 2019

- Matrix Group Theory (MAS435)

Spring 2019

Delivered some lectures on behalf of the professor, *in English*

- Abstract Algebra II (MAS312)

Fall 2018

Delivered almost all lectures on behalf of the professor

EXPERIENCE

Research in Algebraic Geometry

Former advisor: Sijong Kwak

KAIST

2018–2021

- Classical projective geometry, Applied algebraic geometry

Max Planck Institute for Mathematics in the Sciences

Visiting student

Leipzig, Germany

Summer 2019

- Summer School on Randomness and Learning in Non-Linear Algebra

University Financial Engineering Association (U.FE.A)

Team leader

Seoul, Korea

2016–2017

- Led Master's-level financial engineering studies
- Math mentor; provided helps to teammates who are unfamiliar with complex mathematical concepts
- Studied stochastic modeling and hedge (pricing) theory of various equity, interest rate derivatives.
Example reference: Paul Wilmott on Quantitative Finance

TALKS

- **2023 Summer Conference, the Korean Statistical Society**, Pukyong National University, Busan, Korea 2023
Title: Kernel sufficient dimension reduction and variable selection for compositional data
- **2022 Fall KAIST Math Graduate student Seminar(KMGS)**, KAIST, Daejeon, Korea 2022
Title: Kernel methods for radial transformed compositional data with many zeros
- **2022 Summer Conference, the Korean Statistical Society**, Seoul National University, Seoul, Korea 2022
Title: Kernel methods for radial transformed compositional data with many zeros

AWARDS AND GRANTS

- Presentation Award for Graduate Students, 2nd place, Korean Statistical Society (KSS) 2022
- Silver Awards in University Students Contest of Mathematics, Korean Mathematical Society (KMS) 2016, 2017
- Presidential Science Undergraduate Fellowship, fully funded for 8 semesters 2013–2018

SKILLS

- **Machine Learning:** Kernel methods, optimizations, parallel programming
- **Computer Language:** Python, Tensorflow, R
- **Mathematics:** Applied algebraic geometry

LANGUAGES

- **Korean** (native)
- **English** (fluent)