

# JAEHOAN KIM

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<https://jaehoankim.github.io>

## EDUCATION

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**Texas A&M University** College station, TX

Aug. 2022 – Present

*Ph.D. Student, Statistics*

**Seoul National University** Seoul, Korea

Mar. 2016 – Aug. 2022

*B.S., Statistics and Mechanical Engineering (Double major, Summa Cum Laude)*

*\* 2-year leave of absence for military service*

- Thesis title: Fluid dynamic analysis of ping-pong ball trajectory [Codes]
- Statistics GPA 4.18/4.3

**Gyeonggi Science High School** Suwon, Korea

Mar. 2013 – Feb. 2016

*Math and science specialized high School, 1 year early entrance*

## PUBLICATIONS

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1. **Jaehoan Kim**, Jaeyong Lee, (2021) Identifiability of Covariance Kernels in the Gaussian Process Regression Model. *Journal of the Korean data & information Science Society*, 32(6), 1373–1392. [Arxiv]
2. **Jaehoan Kim**, Hoyoung Park, Junyong Park, (2022) High dimensional discriminant rules with shrinkage estimators of covariance matrix and mean vector. *Preprint*. [Arxiv]

## MANUSCRIPT UNDER PREPARATION

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3. **Jaehoan Kim**, Debdeep Pati, (2022+) Scalable and optimal Gaussian process regression using lattice extrapolation.

## RESEARCH EXPERIENCE

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**High dimensional multiple testing Laboratory**, Seoul National University

Jun. 2021 – Nov. 2022

*Undergraduate researcher (Advisor: Prof. Junyong Park)*

- Proved the asymptotic property of linear discriminant rules based on the shrinkage mean estimator using  $f$ -modeling strategy
- Compared the performance of linear discriminant rules built upon multiple precision estimation strategies in high dimensional situation

**Bayesian Statistics Research Laboratory**, Seoul National University

Aug. 2020 – Jun. 2021

*Undergraduate researcher (Advisor: Prof. Jaeyong Lee)*

- Suggested the sufficient condition for identifiability in a Gaussian process with a mixed covariance kernel
- Designed an experiment to analyze the thermal conductivity of metals in the Bayesian aspect

## WORK EXPERIENCE

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**Intellicon Lab, Inc.** Seoul, Korea

Feb. 2022 – Apr. 2022

*Research intern in a project to build an art education application*

- Suggested image similarity metrics using the values in a latent space of a Convolutional Autoencoder
- Constructed a python code converting the given color image into a sketched version without OpenCV using Convolutional Autoencoder structure with 3000+ color-sketch image pairs for training

**KBrainLab LLC.** Yongin, Korea

Jun. 2021 – Jun. 2022

*Startup which provides Korean lottery number recommendation service*

- Developed a lottery number recommendation algorithm using graph theory that improved the expected value of the customers by 9%, ensuring 100% of winning the high-rank lottery in a group aspect
- Substantiated the effectiveness of the algorithm with nonparametric testing methods

- Took the initiative of founding as a Chief Technical Officer / Co-founder

**20<sup>th</sup> Fighter Wing, Republic of Korea Air Force**

Feb. 2018 – Jan. 2020

- Served and honorably discharged from Republic of Korea Air Force, Staff Sergeant

## AWARDS

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**University Mathematics Competition, Korean Mathematical Society**

- **1<sup>st</sup> place**, grand prize, 2020 (Awarded \$1,000)
- **2<sup>nd</sup> place**, gold prize, 2019

**Korean Mathematics Competition, Korean Society of Mathematical Education**

- **1<sup>st</sup> place**, grand prize, 2015

## HONORS

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**Overseas Ph.D. Scholarship, Yongwoon Scholarship Foundation**

Aug. 2022

- Merit-based scholarship for promising Ph.D. students studying out of Korea (USD 25,000 \$)
- Selected as one of four recipients nationwide in 2022

**Young Engineer's Honor Society**

Sep. 2020 – Present

- National Academy of Engineering of Korea

**SNU Engineering Honor Society (STEM)**

Sep. 2020 – Present

- College of Engineering, SNU

**Merit-Based Scholarship, Hyunsong Educational & Cultural Foundation**

Feb. 2017 – Dec. 2021

- Merit-based scholarship for undergraduate student (USD 6,000 \$ per year)
- Nominated as the representative of the Department of Engineering

## COURSEWORK

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**Graduate Courses**

- **Theory of Statistics (A+, Class Rank: 2/35)**, Seoul National University
- **Probability Theory (Midterm 1, 2 Class Rank: 1/15), Statistical Computations, Theory of Linear Models (Midterm Class Rank: 1/15)**, Texas A&M University

## TEACHING EXPERIENCES

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**Overview of Mathematical Statistics, Texas A&M University**

Fall' 2022

- Worked as a graduate assistant in teaching for STAT 630 (graduate course)
- Hosted weekly TA sessions and graded 10+ homework of 40+ students

**Regression Analysis and Lab., Seoul National University**

Spring' 2022

- Selected as an undergraduate tutor and hosted 10+ tutoring sessions in Regression Analysis and Lab., a requisite course for juniors in Statistics

**Mathematical Statistics 2, Seoul National University**

Fall' 2021

- Selected as an undergraduate tutor and hosted 10+ tutoring sessions in Mathematical Statistics 2, a requisite course for juniors in Statistics

**Dynamics and Fluid Mechanics, Seoul National University**

Sep. 2020 – Feb. 2021

- Selected as an undergraduate tutor and hosted 10+ tutoring sessions in Dynamics and Fluid Mechanics, a requisite course for juniors in Mechanical Engineering

**Calculus 1, Seoul National University**

Winter' 2020, Winter' 2021

- Assisted 10 freshmen with 5+ assignments and feedback about calculus 1 course

## EXTRACURRICULAR ACTIVITIES

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### AI Tech Play

Jan. 2021 – Aug. 2021

- Led the Technology Team to deliver free AI education to 200+ middle school students struck by COVID-19
- Created a coding education booklet based on the autonomous RACECAR code materials from MIT Lincoln Lab.

### Campus Mentoring Program, Seoul National University

Aug. 2020 – Dec. 2020

- Assisted the adaptation of 15 freshmen to university life as a mentor group leader

### SNU Buddy

Spring 2020, Spring 2021, Fall 2021

- Official buddy program for the international exchange students in Seoul National University

### Global Inter-culturing and Volunteering, Seoul National University

Mar. 2016 – Feb. 2018

- Organized the volunteering education camp for equal opportunity of education for students in underprivileged areas as a vice president
- Performed community service in Cambodia for two weeks; educated elementary school students with self-planned material, built a community garden and provided free rice to people (*Summer' 2016*)
- Educated math for elementary school students with a self-devised curriculum in underprivileged areas for a week as a team leader (*Summer' 2017, Winter' 2017, 2018*)

### X-corps (Practical Issue Research Contest)

Jul. 2017 – Jan. 2018

- Established a drone-based automated survivor detection system in a fire scene using a path-planning algorithm
- Devised a signal detection algorithm using the variance after a fast Fourier transform and improved the filtration accuracy significantly

### Dream Camp Mentoring

Jul. 2017

- Designed the mentoring program and educated high school students in the countryside

## SKILLS

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- **Programming:** R, Python, MATLAB, C++
- **English:** iBT: 109 (R30, L30, S22, W27), GRE: Verbal 157, Writing 4.0
- **GRE Subject Test:** Mathematics (Scaled score: 970, Percentile: 97%)