Kihyun Han (Korean Name: 한기현)

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Education

Seoul National University   *Mar 2016 – Jul 2022*
Bachelor of Science in Mathematical Sciences, Statistics (Double Major)
- Overall GPA: 4.09 / 4.3
- Major GPA: 4.15 / 4.3 [Mathematical Sciences: 4.09 / 4.3, Statistics: 4.26 / 4.3]

Seoul Science High School   *Mar 2013 – Feb 2016*
- Overall GPA: 4.18 / 4.3

Research Experience

*Please follow the above **homepage** link for the full reports.*

2021 Korea University Students Industrial Engineering Project Competition   *Jun 2021 – Nov 2021*
  Advisor: Professor Ilkyeong Moon
  Title: "Dynamic Pickup and Delivery Problem: Spatial clustering-based Bundling and Allocation Heuristics, Postponement, and Hierarchical Order Classification" *with Haemin Park*
- Developed algorithms and codes in Python of hierarchical clustering with cluster diameter and adopted spatial randomness based on the inter-event distance
- Applied random permutation test and the Bonferroni test to prove the equivalence of restaurant distributions
- Computed optimal parameters that maximize service level by applying simulation and neural network model

2021 Summer Undergraduate Research Internship in College of Natural Sciences   *Jun 2021 – Aug 2021*
  Advisor: Professor Gerald Trutnau
  Title: "Feller Processes and Their Applications"
- Constructed Feller processes from semigroups and derived the Hille-Yosida theorem
- Analyzed various perspectives to understand diffusions and observed Brownian motions and Lévy processes as instances of Feller processes to obtain their generators and probabilistic properties

2020 Winter Undergraduate Research Internship in College of Natural Sciences   *Dec 2020 – Feb 2021*
  Advisor: Professor Sangyeol Lee
  Title: "Unit root tests for Panel Data and Application to World Temperature Data"
- Applied the Bonferroni test and several unit root tests, including ADF test and IPS test, to infer the existence of autocorrelation and stationarity of world temperature data
- Investigated papers and graduate-level books about time series of panel data analysis and Granger causality

2018 Fall Undergraduate Research Internship in College of Natural Sciences   *Sep 2018 - Feb 2019*
  Advisor: Professor Chae Young Lim
  Title: "Understanding Extreme Value Theory and Application to Fine Dust Level in South Korea"
- Derived the convergence of maxima to Generalized Extreme Value distribution by reading in-depth materials
- Thought about which interesting results can be made from daily maxima of fine dust level and used R to analyze regions of the highest and the lowest return level as well as inference for seasonality and linearity

Honors, Awards, and Scholarships

A: Korean Institute of Industrial Engineers, B: Korean Mathematical Society, C: Korea Student Aid Foundation, D: Woongjin Foundation

5 semesters Dean's List in College of Natural Sciences		*2016-1,2, 2018-1,2, 2021-1*
Korea University Students Industrial Engineering Project Competition [A]	Silver Award (3rd place)	*Nov 2021*
University Students Contest of Mathematics (for math major) [B]	Gold Award	*Nov 2018*
University Students Contest of Mathematics (for math major) [B]	Bronze Award	*Nov 2016*
Korean Mathematical Olympiad [B]	Gold Award	*Oct 2013*
Asian Pacific Mathematical Olympiad	Bronze Award (4th place)	*Mar 2013*
Korean Mathematical Olympiad [B]	Gold Award	*Oct 2012*
Presidential Science Scholarship [C]		*Mar 2016 – Present*
Youth Scholarship [D]		*Feb 2013 – Dec 2015*

Certificates

Coursera

"Deep Learning" Specialization (In progress, 4/5)	*offered by "Deeplearning.ai"*
"Practical Time Series Analysis" course	*offered by "The State University of New York"*
"Machine Learning" course (Audit)	*offered by "Stanford University"*
"Improve Your English Communication Skills" Specialization (Audit)	*offered by "Georgia Institute of Technology"*

Skills & Interests

Programming: R, Python, C, MATLAB
- Skilled at using 'dplyr' and 'ggplot2' packages in R
- Able to construct a neural network model in R
- Able to utilize Git to conduct collaborative projects

Documentation: LaTeX, R Markdown, Microsoft Office (Word, Excel, PowerPoint)
Language: Korean (Native), English (Fluent), German (Beginner), Chinese (Beginner)
Personal Interests: Playing and watching sports (Soccer, Baseball), Watching movies

Extracurricular Activities

<Leadership>
Student President of Department of Mathematical Sciences   *Oct 2017 – Oct 2018*
- Represented the department (around 200 undergraduates) and delivered opinions in meetings with faculties
- Run student council meetings to improve academic milieu and student welfare
- Organized and emceed events for students' amity and entertainments such as freshman orientation

<Work Experience>
The Republic of Korea Army (Mandatory military service)   *Apr 2019 – Nov 2020*
- Led a driver squad of 7 members and managed driving equipment and repair parts in storages
- Created daily reports with HanCell and HanWord programs (similar to Microsoft Excel and Word)
- Read graduate-level books and materials to build theoretical backgrounds *(listed on the **homepage**)*

<Teaching & Work Experience>
Instructor at P&K Math Academy (Private education institute)   *Nov 2020 – Present*
- Give lectures about Olympiad level geometry and combinatorics
- Teach 20 science high school students about "Calculus" and "Linear Algebra"
- Evaluate students' tests and assignments by checking their solution thoroughly and pointing out logical errors

Private Tutor   *Jan 2016 – Present*
- Devise mathematical Olympiad and high school math problems
- Counsel students and parents on academic plans and concerns through deep conversation

<Other>
Reviewer of Korean Mathematical Olympiad   *May 2018*
- Examined the validity of test problems prior to the test by verifying all possible assumptions thoroughly
- Revised problems at the test time by dealing with inquiries from test participants

Volunteering

College of Natural Sciences Summer Science Volunteering Camp   *Aug 2016, Aug 2017*
- Introduced intriguing scientific facts and experiments to students living in rural areas
- Advised high school students as an interviewer in a mock interview for university admission

Hanulbit Library   *Feb 2021*
- Arranged and sterilized books used by clients under COVID-19 circumstances
- Assisted elders and the disabled to find books and articles on the bookshelves

Institute of New Hope (Foster care institution)   *May 2014 – Aug 2015*
- Taught a student in the institution weekly about math and English
- Advised the student to set academic plan and pursue her own goal