

HYUNG GYU MIN

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Fields of Interest

Dimension Reduction Quantum Data Science Nonparametric Modeling Optimization

Education

Sep 2020 - Present **Yonsei University**, Seoul, Republic of Korea
Master of Arts, Statistics
GPA: 4.27/4.30 **(4.00/4.00)**

Mar 2014 - Aug 2020 **Yonsei University**, Seoul, Republic of Korea
Bachelor of Arts, Applied Statistics
Stat & Math GPA: 4.11/4.30 **(3.91/4.00)** Overall GPA: 3.70/4.30 **(3.56/4.00)**

English Proficiency

TOEFL iBT **101/120**: 30/28/23/20 (R/L/S/W) October 13, 2021
GRE General Test **V 161** (88%)/ **Q 169** (94%)/ **W 3.5** (37%) February 26, 2021

Relevant Study

Quantum Machine Learning Schuld, M. & Petruccione, F. (2019). Supervised Learning with Quantum Computers, Cham, Switzerland: Springer

Theory of Hilbert Space Debnath, L. & Mikusinski, P. (2005). Introduction to Hilbert Space. London, UK.: Elsevier Academic Press

Abstract Integration Rudin, Walter. (1987). Real and Complex Analysis. Singapore: McGraw-Hill.

Convex Optimization Boyd, S. & Vandenberghe, L. (2004) Convex Optimization. Cambridge, UK: Cambridge University Press.

Bayesian Statistics Gelman, A., Carlin, B.J., ... & Rubin, D.B. (2021). Bayesian Data Analysis. Boca Raton, FL: CRC Press.

Teaching Experiences

Yonsei University Teaching Assistant for **Quantum Finance Computing** (Sep 2022 - Dec 2022)
Teaching Assistant for **Multivariate Analysis** (Sep 2022 - Dec 2022)
Teaching Assistant for **Theory of Dimension Reduction** (Mar 2022 - June 2022)
Teaching Assistant for **Qiskit for Data Science** (Mar 2022 - June 2022)
Teaching Assistant for **Big Data and Quantum Computing** (Sep 2021 - Dec 2021)
Teaching Assistant for **Multivariate Analysis** (Sep 2021 - Dec 2021)
Teaching Assistant for **Statistical Data Analysis** (Mar 2021 - June 2021)
- Prof. *Hakbae Lee*

Yonsei University Teaching Assistant for **Introduction to Statistics** (Sep 2020 - Dec 2020)
- *Instructor. Hogyu Lee*

Programming Skills

Python(Qiskit, Scikit-Learn, Tensor Flow), R(RCPP, Shiny, Tidyverse)

Awards And Honors

May 2019 Excellence Prize for 2019 Embrain Panel Big Data Analysis Competition
Fall 2019 High Honors (Yonsei University)

Working Papers

Quantum Data Science	A Study on the Universality and Expressibility of the Quantum Kernels for Nonparametric Dimension Reduction
In preparation	<ul style="list-style-type: none">- A research for exploring the characteristics and performance of quantum kernel- Proved that Reproducing Kernel Hilbert Space (RKHS) endowed with quantum kernel have universality on L_2 space
Dimension Reduction	Binary Constrained Dimension Reduction Algorithms for Sparse Big Data Analysis
In preparation	<ul style="list-style-type: none">- A research to find better methods to handle the sparse data problem including microbiome data or online commerce data.- Using Quantum Annealing (QA), Simulated Annealing (SA) and Genetic Algorithm (GA) to find optimal solution of combinatorial problems.
Variable Selection	Variable Selection for linear model using quantum algorithm
In preparation	<ul style="list-style-type: none">- A research for solving multi-collinearity problems using the Quantum Computer- Designed and suggested new measure of Quadratic Unconstrained Binary Optimization (QUBO) for finding the best combination of variables
Quantum Finance	Real Estate Portfolio Optimization using Quantum Approximated Optimization Algorithm
In preparation	<ul style="list-style-type: none">- A research for applying the quantum algorithm into real financial problems- Applied risk management strategy into portfolio optimization
Microbiome Analysis	Altered gut microbiota in individuals with episodic and chronic migraine
In Revision	<ul style="list-style-type: none">- Made poisson regression models and analyzed the relation between frequency of migraine and microbiota

Extracurricular Activities

Korea Quantum Computing	Department of Research and Development
Director : Dr. Kion Kim	Researcher (Assistant Manager)
June 2022 - Present	<ul style="list-style-type: none">- IBM Hub for the introduction of quantum computers and research company to study the Quantum Data Science- Conducted research projects about Quantum Data Science and made several lectures for the beginner of the Quantum Computing.
Yonsei University	Quantum DnA Raboratory
Director: Prof.Daniel K. Park	Researcher
Mar 2022 - Present	<ul style="list-style-type: none">- The laboratory of Prof.Daniel Kyungdeock Park- Researched about Quantum Convolutional Neural Network and Quantum Error Mitigation
Yonsei University	Institute of Data Science
Director: Prof. SeungHo Kang	Chief Consulting Assistant
Mar 2021 - Present	<ul style="list-style-type: none">- Institution to help statistical analyses of other department in university including biology, social science, engineering and etc.- Worked as consulting assistant and consulted 20 numbers of cases at 2021- Worked as chief consulting researcher and lead junior researchers at 2022.
Yonsei University	Data Science Lab(DSL)
Advisor: Prof. TaeYoung Park	Director of Academic Affairs
Jan 2019 - Dec 2020	<ul style="list-style-type: none">- Undergraduate academic society to study data science and statistical theories- Acted as a founding member and constructed several programs for studies and projects- Ran classes for undergraduate students e.g. Bayesian Statistics, Convex Optimization

REFERENCES

Prof. Hakbae Lee hblee@yonsei.ac.kr	Yonsei University Department of Applied Statistics and Data Science Professor
Prof. Daniel Kyungdeock Park dkd.park@yonsei.ac.kr	Yonsei University Department of Applied Statistics and Data Science Professor
Dr. Kion Kim kion.kim@kqchub.com	Korea Quantum Computing Department of Research and Development Chief Researcher (General Manager)