

Jihun Kim

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Highly interested in theoretical understanding of dynamic systems and statistical inference on collected data. Intrigued by convex and non-convex optimization algorithms and those implemented in online learning.

Education

University of California, Berkeley

August 2022 - Present

Ph.D. in Industrial Engineering & Operations Research

Advisor: Prof. [Javad Lavaei](#)

Seoul National University (SNU)

March 2016 – February 2022

B.S. in Industrial Engineering and Statistics

GPA: 4.22/4.3 Rank: 1st

Research Experiences

Adaptive control for nonlinear high-order polynomial systems

March 2021 – September 2021

Advisor: Prof. [Insoon Yang](#) (Dept. of Electrical and Computer Engineering, SNU)

- ◆ Found out the proper initial Lyapunov function with globally asymptotically stable controller in the case of linear system, using the continuous Lyapunov equation
- ◆ In the case of nonlinear high-order system, numerical instability should be handled

WAE may generate better images but VAE offers better representation

June 2021 – August 2021

Advisor: Prof. [Joong-Ho Won](#) (Dept. of Statistics, SNU)

- ◆ Analyzed the effect of label conditioning which is more conducive to image generation of WAE rather than that of VAE, due to the form of loss function
- ◆ VAE provides better disentangled representations than WAE, to the extent that training only via latent vectors of VAE offers over 96% accuracy of classification

Internships

Sports Data Analysis intern @ [Fitogther Inc.](#)

January 2020 – March 2021

- ◆ Aimed for similar player retrieval in the scouting industry, only using the embedding vector from player GPS data to search players who have desirable traits of movement

Semiconductor Image Data Analysis intern @ [SK Hynix](#)

June 2020 – August 2020

- ◆ Trained VAE model only using normal images of semiconductor, underscored the flaws in abnormal images via passing them through trained network and subtracting outputs from the inputs, and leveraged EfficientNet to classify underscored images
- ◆ Winner of 2020 Summer Digital Transformation(DT) Division intern competition

Publications

◆ “6MapNet: Representing Soccer Players from Tracking Data by a Triplet Network”

Hyunsung Kim, **Jihun Kim**, Dongwook Chung, Jonghyun Lee, Jinsung Yoon and Sang-Ki Ko, 8th Workshop on Machine Learning and Data Mining for Sports Analytics, ECML/PKDD, 2021.

Teaching Experiences

Major courses

Operations Research 1 Tutor: Simplex, Ford, Dijkstra, Branch & Bound Algorithm
Statistics for Industrial Engineering Tutor: Estimator, Hypothesis, ANOVA, Regression
Human Factors Engineering Tutor: Signal Detection Theory, Vision, Biosensor, HCI

Liberal Education courses

Calculus 1 (English Medium Instruction) Tutor: Taylor Series, Linear Transformation
College English Tutor: Pronunciation, Short Essay Writing with Fluency

Competences & Languages

Programming	Python == R == MATLAB > Mosel
Skills	SOSTOOLS, CVX, YALMIP (optimization), Tensorflow, Keras, PyTorch (DL)
Languages	Korean (Native) – 1 st place in 52 nd KBS Korean Proficiency Test for Koreans English (Fluent) – TOEFL L/R/S/W 27(30)/30(30)/25(25)/24(26)/106(111) Chinese (Rudimentary) – HSK Level 4
Hobby	Watching Baseball and Soccer, Playing the violin

Relevant Coursework

Optimization	Operations Research 1 – worked on an individual project that aimed to maximize the profit of multi-horizon tree transport planning, formulating it to min-cost flow problem Linear and Nonlinear Optimization – learned both algebraic and geometric grounds validating simplex method with Farkas Lemma(\Leftrightarrow Strong Duality) and polyhedron Convex Optimization – learned SDP includes SOCP, QCQP, QP, LP and explored the mystique of Lagrangian with dual problems of SVM and entropy maximization Combinatorial Optimization – learned deterministic algorithms such as network simplex and the ρ -approximation algorithms using LP relaxation such as randomized rounding
Numerical Analysis	Mathematical Methods for Industrial and Management Engineering – wrote Python code of algorithms for linear systems, and learned the basics of differential equation Computational Statistics – wrote R code regarding Newton iteration (IRLS) of Poisson regression, and numerical integration methods (Newton-Cotes, Gaussian, MC)
Statistical Learning	Advanced Topics in Statistical Learning – learned Rademacher complexity of PAC-learnable function class, kernel, Wasserstein distance, and homomorphic encryption Deep Learning: Statistical Perspective – learned two types of approximation inference differ in computational feasibility: Variational inference and Expectation propagation

Awards & Honors

2022-2026	Kwanjeong Fellowship (Stipend)
2021	Merit-Based Scholarship (Full Amount), S&T Scholarship (Stipend)
2020	SNU Development Fund Scholarship (Full Amount) Award for Excellence as a Tutor in Peer Tutoring Program, SNU Lee Joong-Han Award, Academic Sector, Dept. of Industrial Engineering, SNU
2017	Sinyang Cultural Foundation Scholarship (Full Amount)
2016	Eminence Scholarship (Full Amount) Merit-Based Scholarship for first-year students