Seunghoon Paik

✉ shpaik@berkeley.edu   🌐 seunghoonpaik.com

Research Interests

Statistical Analysis and Methodology on Deep Learning and AI
Generalization / Training dynamics / Forecasting / Uncertainty quantification / AI Safety & Interpretability

Education

University of California, Berkeley, Berkeley, CA   *2021 – May 2026 (Exp.)*
Ph.D. in Statistics (Advisor: Ryan Tibshirani)

Seoul National University (SNU), Seoul, Korea   *2015 – 2021*
B.S. in Mathematical Sciences; B.A. in Economics; Salutatorian in College of Natural Sciences

Military service

Republic of Korea Army (ROKA)   *Mar. 2017 – Nov. 2018*
English translator; Sergeant, Republic of Korea Transport Command

Publications and Preprints

Seunghoon Paik, Kangjie Zhou, and Ryan J. Tibshirani. Basic Inequalities for Early-Stopped Optimization Algorithms with Statistical Applications *arXiv-ready-version*, 2025.

Seunghoon Paik, Michael Celentano, Alden Green, and Ryan J. Tibshirani. Integral Probability Metrics Meet Neural Networks: The Radon-Kolmogorov-Smirnov Test. *Journal of Machine Learning Research*, 2025.

Young-Geun Choi, Gi-Soo Kim, **Seunghoon Paik**, and Myunghee Cho Paik Semi-Parametric Contextual Bandits with Graph-Laplacian Regularization. *Information Sciences 645*, 2023.

Professional Experiences

Two Sigma Investments   *Summer 2025*
Quantitative Research Intern, New York City, NY

Patent

Myounghee Cho Paik, **Seunghoon Paik**, Young-Geun Choi, and Gi-Soo Kim. Method and Apparatus for Calculating Solution of Graph Based Contextual Multi Armed Bandit Problem. *Republic of Korea Patent 10-2815716*, 2025.

Honors and Awards

Korean Government Scholarship Program for Study Overseas   *Fall 2021 – Spring 2023*
National Institute for International Education, Korean Government

2022 Citadel Global PhD Datathon – 2nd place   *2022*
Title: Effect of COVID-19 on health insurance – focus on the government and vaccine

Outstanding Paper Award   *2021*
2021 KAIA Summer Conference, Korea Artificial Intelligence Association

SNU Alumni Association Prize   *2021*
Salutatorian in College of Natural Sciences

University Students Contest of Mathematics – Gold medalist   *2019*
Division for math major students; Korean Mathematical Society

National Science Scholarship   *2015 – 2020*
Presidential Science Scholarship, Korea Student Aid Foundation

Other Research & Academic Activities

Princeton Machine Learning Theory Summer School, ORFE, Princeton *Summer 2023*
- Week-long workshop with primary focus on theoretical advances in deep learning

Graduate Course Research Project, SNU *Fall 2019*
- Topic: Improved structure for knowledge distillation (KD) between neural networks (GitHub repository)
- Proposed new KD model, named Growing Student KD, with sequence of networks with increasing sizes

CryptLab Research Intern, SNU *Spring 2019 – Summer 2019*
- Topic: Efficient Identity-Based Encryption (IBE) from Learning With Rounding problem
- Paid position; Studied on transformation of new IBE scheme into secure public-key encryption with keyword search scheme; Implemented new IBE scheme with C++ lattice cryptography libraries

Undergraduate Research Internship Program, SNU *Fall 2019 – Spring 2020*
- Topic: Neural Ordinary Differential Equation (ODE); Super resolution with deep learning
- Paid position; Studied on interpretation of ResNet as ODE solver and applications of deep learning in numerical analysis problem; Reproduced related works with PyTorch

Student-Directed Course, SNU *Spring 2020*
- Self-designed one-credit course by mathematics major undergraduates
- Topic: Introduction to Reinforcement Learning (RL) and Distributional RL

Gauss Colloquium, SNU *2019 – 2020*
- Regular seminars about mathematics in industries and social sciences
- Highlighted topics: Machine learning for price prediction in Ad-tech industry; Learning with combinatorial structures for efficient machine learning

Google Study Jam, Google *Spring 2019*
- Community-run online study group project for developer, organized by Google
- Received certificates: Production machine learning system; End-to-end machine learning with TensorFlow on Google Cloud Platform

Teaching

Graduate Student Instructor, University of California, Berkeley
- STAT 201A Introduction to Probability at an Advanced Level *Fall 2025*
- STAT 151A Linear Modelling: Theory and Applications *Spring 2025*
- STAT 241B Advanced Topics in Statistical Learning *Spring 2023, Spring 2024*
- STAT 134 Concepts of Probability *Fall 2022*
- STAT W21 Introductory Probability and Statistics for Business *Summer 2022*
- STAT 88 Probability and Mathematical Statistics in Data Science *Spring 2022*

Technical Skills

Python (Advanced); R (Intermediate); C, C++, SQL (Basic)