Hong Suh

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EDUCATION

University of California, Berkeley — Berkeley, CA
Ph.D, Mathematics — on leave
Specializations: Probability, Partial Differential Equations
Qualifying exams passed on April 9th, 2018

University of California, Berkeley — Berkeley, CA
M.A, Mathematics (GPA: 3.85) — May 2019
Graduate coursework: Probability, Numerical Differential Equations, Partial Differential Equations

Pomona College — Claremont, CA
B.A, Mathematics (GPA: 3.89), cum laude, 3 department awards — May 2016
Coursework: Fundamentals of CS (functional programming), Data Structures & Algorithms

SKILLS

Programming: Python, R, SQL, Java, Mathematica
Tools/Packages: PyTorch, scikit-learn, NumPy, CuPy, Pandas, tidyverse, Plotly
Theory: Deep Learning, Machine Learning, Probability, Numerical Differential Equations, Data Structures, Algorithms

SELECT PROJECTS

◇ *Tennis win prediction model.* (Individual project) — March – August 2020

- Designed and implemented a prediction model for professional tennis player matchups using **Pandas, NumPy**.
- Eliminated human supervision by automating hyperparameter selection using GPU optimization with **CuPy**.
- Decreased log-loss error by about **1.5%** compared to FiveThirtyEight's model.
- Created interactive graphics for users to experiment with predictions using **Plotly**.

◇ *Neural network model for image classification and generation.* (Individual project) — June – August 2020

- Developed a new normalizing flow architecture using masked convolutions and a modified **neural ODE (NODE)** model for image generation using **PyTorch** and Google Colab.
- Conducted rigorous statistical tests on my modified NODE classifier model with **adversarial training** to demonstrate its training speed-up and similar adversarial robustness compared to the vanilla NODE model.

EXPERIENCE

Math Teacher (grades 6-12) — June 2019 – June 2020
Proof School, San Francisco, CA

◇ Created and executed daily 2-hour lesson plans for 8 to 16 students covering advanced math subjects—such as university-level linear algebra, number theory, and discrete probability—to kids who love math.

◇ Created and supervised mathematical programming projects involving fast matrix multiplication, singular value decomposition, pseudorandom number generators, and more.

Graduate Student Instructor (GSI) and Researcher — August 2016 – May 2019
UC Berkeley, Berkeley, CA

◇ Executed lectures and discussions as a GSI or primary lecturer to 20-50 undergraduate students in single-variable calculus, multivariable calculus, and linear algebra.

◇ Conducted research on stochastic interacting particle systems and presented at three seminars.

PUBLICATIONS (AUTHORS IN ALPHABETICAL ORDER)

◇ M. Asada, S. Manski, S. J. Miller, H. Suh, *Fringe pairs in generalized MSTD sets*, Int. J. Number Theory 13.10 (2017): 2653-2675.

◇ P. Burkhardt, A. Z.-Y. Chan, G. Currier, S. R. Garcia, F. Luca, H. Suh, *Visual Properties of Generalized Kloosterman sums*, J. Number Theory 160 (2016), 237-253.