

Hong Suh

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https://hongsuh7.github.io ◇ https://github.com/hongsuh7

SKILLS

Programming: Python, R, SQL, Mathematica, L^AT_EX

Tools/Packages: PyTorch, scikit-learn, NumPy, CuPy, Pandas, tidyverse, Plotly

Theory: Deep Learning, Machine Learning, Probability, Statistical Mechanics, Numerical Differential Equations, Algorithms

SELECT PROJECTS

◇ *Neural network model for image classification and generation.*

- Developed a new normalizing flow architecture using masked convolutions and a modified **neural ODE (NODE)** model for image generation using **PyTorch**.
- 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.

◇ *Tennis win prediction model.*

- 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**.

◇ *PhD research on stochastic homogenization for an exclusion process.*

- Established **previously unresolved quantitative bounds** on the long-term statistics of a stochastic growth model, which is a class of models encompassing infection disease growth, forest fires, crystal growth, and more.

◇ *Undergraduate research on fringe pairs in generalized MSTD sets.*

- Developed new algorithm to construct generalized MSTD sets, which are special integer sets, using **Mathematica**.
- Discovered the **most “extreme” MSTD set** known at the time using the algorithm.

EXPERIENCE

Math Teacher

June 2019 – June 2020

Proof School, San Francisco, CA

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

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 theoretical research, presented at three seminars, and published one paper.

EDUCATION AND AWARDS

<i>Ph.D</i> , Mathematics	on leave	<i>M.A</i> , Mathematics	2019	<i>B.A</i> , Mathematics, cum laude	2016
Specializations: Probability, PDEs		Specializations: Probability, PDEs		GPA: 3.89	
UC Berkeley, Berkeley, CA		UC Berkeley, Berkeley, CA		Pomona College, Claremont, CA	

- ◇ NSF Graduate Research Fellowship Honorable Mention 2016
- ◇ 3 Pomona College Mathematics Department Prizes 2014, 2015, 2016