# Henry Smith

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## Overview

PhD candidate in Statistics at Stanford (Knight-Hennessy Scholar, NSF Fellow) specializing in probabilistic generative modeling and scalable Bayesian inference for time series data. My research aims to advance state-of-the-art generative models—including diffusion models, normalizing flows, and autoregressive language models—with applications to computational protein design and neuroscience.

## Education

**Stanford University**, Palo Alto, CA 2023 -
*Ph.D., Statistics*
Advisors: Scott Linderman and Brian Trippe
Relevant Coursework: stochastic processes, probabilistic machine learning, information theory, theoretical statistics, probability theory

**Yale University**, New Haven, CT 2018 - 2022
*B.S., Statistics & Data Science, Mathematics*
*summa cum laude*
Thesis: "Implicit Regularization in Deep Learning: The Kernel and Rich Regimes"
Advisor: Harrison Zhou

## Work Experience

**Research Assistant (full-time)** Oct 2022 - Oct 2023
*University of Cambridge, Department of Computer Science & Technology* *Cambridge, UK*
Advisor: Amanda Prorok

- Mathematically formalized and programmed geometric deep learning algorithms to enable close proximity flight of aerial drones (e.g., for search and rescue tasks); validated in simulation and real-world experiments

**Student Research Assistant** Jun 2021 - Jun 2023
*Cornell University, Department of Mathematics* *Ithaca, NY*
Advisors: Alex Townsend, Nicolas Boullé

- Developed mathematically interpretable deep learning algorithms for the unsupervised discovery of linear partial differential equations (PDEs)

## Awards & Honors

Departmental Teaching Award[1]| *Stanford Department of Statistics* Jun 2025

Knight-Hennessy Scholarship[2]| *Stanford University* | $300,000 May 2024

Graduate Research Fellowship | *National Science Foundation (NSF)* | $147,000 Sep 2023

EDGE (Enhancing Diversity in Graduate Education) Fellowship | *Stanford University* | $12,800 Sep 2023

Outstanding Senior Thesis Award in Statistics & Data Science[3]| *Yale University* May 2022

[1]Remarks from students and faculty: "extremely conscientious, proactive, and well prepared"; "the strongest TA in 10 years"
[2]Full-ride scholarship for graduate studies at Stanford; scholars selected on the basis of independence of thought, purposeful leadership, and civic mindset; 89 scholars selected from ∼8000 applicants
[3]One of two graduating seniors selected to receive the award by the Statistics & Data Science department faculty

Emerson Tuttle Cup[4]| *Yale University* May 2022

Phi Beta Kappa | *Yale University* Feb 2022

Research Experience for Undergraduates (REU) | *National Science Foundation (NSF)* | $5,000 Jun 2021

Google Summer of Code Fellowship | *Google* | $6,000 May 2020

Richter Summer Research Fellowship | *Yale University* | $1,000 May 2020

## Publications

[1] **H. Smith**, N. Diamant, B. Trippe. Calibrating generative models. *arXiv preprint arXiv:2510.10020*, 2025.

[2] A. Hu*, **H. Smith***, S. Linderman. SING: SDE inference via natural gradients. *Advances in Neural Information Processing Systems (NeurIPS)*, 2025.

[3] **H. Smith**, A. Shankar, J. Gielis, J. Blumenkamp, A. Prorok. SO(2)-equivariant downwash models for close proximity flight, *Robotics and Automation Letters (RA-L)*, IEEE, 2024.

$*$ denotes equal contribution

## Presentations

[1] Calibrating Generative Models. *International Conference on Machine Learning (ICML) Generative AI and Biology Workshop*, 2025. [Spotlight] (10% of accepted submissions selected for talk)

## Teaching

Teaching Assistant:

STATS 315: Modern Applied Statistics, Learning | *Stanford University* Winter 2025

STATS 202: Statistical Learning and Data Science [Head Teaching Assistant] | *Stanford University* Fall 2024

STATS 60: Introduction to Statistics | *Stanford University* Spring 2024

S&DS 365/665: Intermediate Machine Learning | *Yale University* Spring 2022

S&DS 262/562: Computational Tools for Data Science | *Yale University* Spring 2021

S&DS 100/500: Introduction to Statistics | *Yale University* Fall 2019

## Service

Stanford Women and Allies in Statistics | Member, Event Organizer Fall 2023 -

Reviewer, *International Conference on Learning Representations (ICLR)* 2025

Stanford Department of Statistics Qualifying Exam Reader Summer 2025

Reviewer, *Learning for Dynamics and Control Conference (L4DC)* 2024

## Technical Skills

**Languages**: Python, R, C, MATLAB, SQL
**Frameworks**: JAX, PyTorch, TensorFlow
**Research tools**: Git, Linux/HPC, Docker, SLURM
**Open-source contributions**: Developer of `cgm` (https://github.com/smithhenryd/cgm) and `sing` (https://github.com/lindermanlab/sing) repositories

[4]Presented annually at Commencement to the Davenport College senior most distinguished for scholastic attainments; there were approximately 130 students in the graduating class