William Hartog
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Education

STANFORD UNIVERSITY Stanford, CA
Ph.D. Candidate in Statistics. Advised by Lihua Lei. June 2026

HARVARD UNIVERSITY Cambridge, MA
A.B. Cum Laude with High Honors in Mathematics and Statistics with a Secondary in Music. May 2021

Awards

Achievement Rewards for College Scientists (ARCS) Scholar 2024 – 2025

Research Experience

STANFORD UNIVERSITY Stanford, CA
Research with Advisor Lihua Lei September 2022 – Present

- Developed a framework for controlling family-wise error rate (FWER) with e-values, a recently developed notion of statistical evidence that is more robust than p-values.
- This procedure is widely applicable in controlling FWER in experimentation settings in which the data arrives in a sequential way, such as in online experimentation, sequential clinical trials, and social science experiments.
- Developed a dynamic programming approach to compute the closed test on any direct acyclic graphs (DAG), improving the computational complexity from exponential to polynomial in the size of number of hypotheses.

Research with Lihua Lei and DoorDash February 2024 – Present

- Adapting budget-split design for A/B testing with network interference for experiments at DoorDash.
- Developing a surrogate method for A/B testing for long-term effects.

Research with Tselil Schramm September 2022 – Present

- Investigating the high-dimensional Random Geometric Graph (RGG) model, in which edges are determined by an underlying random geometry, which is a promising model for real-world networks.
- Considering statistical properties, particularly the question of in which settings the random walk on the RGG model displays cutoff, which gives insight into the relationship between the graph and the underlying geometry.

HARVARD BUSINESS SCHOOL Boston, MA
Research Assistant August 2020 – September 2021
PRIMO Research Fellow June – August 2020

- Participated in competitive HBS undergraduate research program, with a total of seventeen fellows
- Worked as part of program and continues to work under supervision of Professor Josh Lerner and colleagues on an upcoming research paper. Performed data visualization on large earnings calls and patents datasets, developed procedure for correlation-based clustering on two-word bigrams.

Talks and Posters

Stanford Causal Science Center Conference on Experimentation Stanford University, May 2024
CODE@MIT MIT, November 2023
Experimentation and Causal Inference Stanford University, June 2023

- **Multiple A/B Testing with always-valid e-values:** Joint work with Lihua Lei; presented algorithms to compute the graphical approach for FWER control with e-values using a weighted average local test.

Statistics Department Retreat Stanford University, May 2023

- **Once Upon a Stream: Mining for Significance:** Presented on an instance of the discussion of multiple testing and selective inference in the mainstream, testing for cheating in a 2020 Minecraft speedrun.

Teaching Experience

STANFORD UNIVERSITY Stanford, CA

PRIMARY INSTRUCTOR

Stats 217: Stochastic Processes I June – August 2023
June – August 2024

- Prepared and taught masters-level introductory course in stochastic processes, including discrete- and continuous-time Markov chains, branching processes, and Poisson processes.

Stats 100: Mathematics of Sports April – June 2023
January – March 2024

- Designed and taught undergraduate-level course in sports statistics, covering a variety of principles and methods applicable in sports analytics, including linear and logistic regression, shrinkage, Markov and Poisson models.
- Created slides and R examples from variety of sources and created homeworks and homework templates for the R language.
- Guided students through final project and curated website for display of projects.

TEACHING ASSISTANT

Stats 116: Introduction to Probability September – December 2022
Stats 216V: Introduction to Statistical Learning June – August 2022
Stats 100: Mathematics of Sports January – March 2022
Stats 202: Data Mining and Analysis September – December 2022

HARVARD UNIVERSITY Cambridge, MA

TEACHING ASSISTANT

Math S1a: Calculus I June – August 2021
Math 154: Probability Theory January – May 2021
Stat 110: Introduction to Probability September – December 2020
Math 101: Sets, Groups and Topology September – December 2019
Math S1ab: Calculus I and II June – August 2019
Math 21b: Linear Algebra September – December 2018

Service and Activities

STANFORD STATISTICS Stanford, CA
Applied Statistics Qualifying Exam Coach June – August 2024

- Led review and problem solving sessions for the summer quarter to prepare first year statistics doctoral students for their qualifying exam in applied statistics.

ACADEMIC REVIEW WORK

- Annals of Statistics, Biometrical Journal

STANFORD BIOMEDICAL DATA SCIENCE Stanford, CA
Research Mentor January – March 2023

- Acted as a graduate mentor for a local community college student majoring in data science.
- Provided advice and guidance for statistics coursework and learning statistical and coding concepts.

HARVARD CLUB ULTIMATE FRISBEE Cambridge, MA
Team Member, Team Captain September 2017 – May 2021

- Trained and competed as member and captain of Harvard's Division I Ultimate Frisbee team.
- Traveled to over six competitive weekend tournaments each season.
- Coordinated with team coaches on strategy, planned event logistics and general team activities.

Skills and Interests

Technical: Experienced with Python, R. Familiar with OCaml, Mathematica, Microsoft Excel
Language: Conversational Spanish
Interests: Ultimate Frisbee, French Horn, Crosswords