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🐦 @hgoldstein95

## Education

Ph.D. in Computer Science  
**University of Pennsylvania**  
Ongoing

M.Eng. in Computer Science  
**Cornell University**  
2018 — GPA 4.02

B.S. in Computer Science  
**Cornell University**  
2014-2018 — GPA 4.08

## Teaching

Penn CIS 552  
**Head TA** 2020-2021

Penn CIS 810  
**Head TA** 2021

Cornell CS 3110  
**Head TA** 2017

Cornell Eng. Leadership  
**Head TA** 2017

Cornell CS 2112  
**TA** 2016

## Awards and Honors

Victor Basili Postdoctoral  
Fellowship  
**University of Maryland**

Certificate in Engineering  
Leadership  
**Cornell ECLP**

1<sup>st</sup> Place, Business Plan  
Competition  
**Cornell Sch. of Hotel Admin.**

# Harrison Goldstein

## Ph.D. Researcher

I am a Ph.D. candidate studying under Prof. Benjamin C. Pierce. My work combines techniques from programming languages and human-computer interaction to address software engineering problems. My current focus is on property-based testing.

## Selected Publications

*Property-Based Testing in Practice* **DISTINGUISHED PAPER**  
**ICSE 2024** Research Paper

*Reflecting on Random Generation* **DISTINGUISHED PAPER**  
**ICFP 2023** Research Paper

*Etna: An Evaluation Platform for Property-Based Testing*  
**ICFP 2023** Experience Report

*Parsing Randomness*  
**OOPSLA 2022** Research Paper

*Do Judge a Test by its Cover: Combining Combinatorial and Property-Based Testing*  
**ESOP 2021** Research Paper

*Conferences after COVID: An Early-Career Perspective*  
**PL Perspectives** SIGPLAN Blog Post

## Employment

Research Intern  
**Galois, Inc.** 2023

Research Intern  
**Amazon Web Services** 2020

Software Engineer and Software Engineering Intern  
**Broadway Technology** 2017-2019

Technology Intern  
**Susquehanna International Group, LLC** 2016

Chief Technology Officer  
**Last Second Beach, LLC** 2015-2016

## Selected Service Roles

Steering Committee Member  
**NJPLS** Ongoing

Organizer  
**NJPLS 2023**

Research Mentor  
**REPL REU 2023**

Editor in Chief  
**PLClub Blog**

PC Member  
**HATRA 2023**

Social Chair  
**POPL 2021**

Research Mentor  
**DeepSpec REU**

A/V Coordinator  
**ICFP 2021**

# Harrison Goldstein

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## Publications and Talks

### Papers

1. *Stream Types*  
Joseph W. Cutler, Christopher Watson, Emeka Nkurumeh, Phillip Hilliard, **Harrison Goldstein**, Caleb Stanford, Benjamin C. Pierce  
Programming Language Design and Implementation (PLDI) 2024. Pending publication. 20 pages.
2. *Daedalus: Safer Document Parsing*  
Iavor Diatchki, Mike Dodds, **Harrison Goldstein**, Bill Harris, David Holland, Benoit Razet, Cole Schlesinger, Simon Winwood  
Programming Language Design and Implementation (PLDI) 2024. Pending publication. 20 pages.
3. *Property-Based Testing in Practice* **Distinguished Paper**  
**Harrison Goldstein**, Joseph W. Cutler, Daniel Dickstein, Benjamin C. Pierce, Andrew Head  
International Conference on Software Engineering (ICSE) 2024. 10 pages.
4. *Tyche: In Situ Analysis of Random Testing Effectiveness (Demo)*  
**Harrison Goldstein**, Benjamin C. Pierce, Andrew Head  
User Interface Software and Technology (UIST) 2023. Article 96, pages 1–3.
5. *Reflecting on Random Generation* **Distinguished Paper**  
**Harrison Goldstein**, Samantha Frohlich, Meng Wang, Benjamin C. Pierce  
International Conference on Functional Programming (ICFP) 2023. Article 200, 34 pages.
6. *Etna: An Evaluation Platform for Property-Based Testing (Experience Report)*  
Jessica Shi, Alperen Kelles, **Harrison Goldstein**, Benjamin C. Pierce, Leonidas Lampropoulos  
International Conference on Functional Programming (ICFP) 2023. Article 218, 17 pages.
7. *Parsing Randomness*  
**Harrison Goldstein**, Benjamin C. Pierce  
Object-Oriented Programming, Systems, Languages, and Apps. (OOPSLA) 2022. Article 128, 25 pages.
8. *Some Problems with Properties: A Study on Property-Based Testing in Industry*  
**Harrison Goldstein**, Joseph W. Cutler, Adam Stein, Benjamin C. Pierce, Andrew Head  
Human Aspects of Types and Reasoning Assistants (HATRA) 2022. Non-archival, 8 pages.
9. *Do Judge a Test by its Cover: Combining Combinatorial and Property-Based Testing*  
**Harrison Goldstein**, John Hughes, Leonidas Lampropoulos, Benjamin C. Pierce  
European Symposium on Programming (ESOP) 2021. Vol 12648, pages 264–291.
10. *Programming Language Support for Natural Language Interaction*  
Alex Renda, **Harrison Goldstein**, Sarah Bird, Chris Quirk, Adrian Sampson  
Conference on Machine Learning and Systems (SysML) 2018. Non-archival, 3 pages.

### Talks

1. *Consider Collaboration* [Talk]  
Samantha Frohlich, **Harrison Goldstein**  
PL Mentoring Workshop @ POPL, January 2024

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2. *Advancing Property-Based Testing in Theory and Practice* [Talk]

**Harrison Goldstein**

UCSC LSD Seminar, October 2023

and Galois, Inc., October 2023

and UC Berkeley PLAIT Lab, September 2023

and Microsoft Research, September 2023

and University of Bristol, January 2024

3. *Property-Based Testing in Practice* [Talk]

**Harrison Goldstein**

Jane Street Programming Languages Colloquium, December 2023

4. *TheForkJoin Episode 2* [Podcast]

Oliver Flatt, Rachit Nigam, **Harrison Goldstein**

TheForkJoin

5. *Some Problems with Properties* [Talk]

**Harrison Goldstein**

NJPLS October 2022

6. *Reflecting on Random Generation* [Talk]

**Harrison Goldstein**

NJPLS May 2022

## Other Content

1. *Ungenerators* (Poster)

Harrison Goldstein

ICFP 2021

2. *Delimited Continuations and Monads*

Harrison Goldstein

Unpublished PhD Milestone Draft, April 2021

3. *Conferences after COVID: An Early Career Perspective*

Joseph W. Cutler, Harrison Goldstein, Andrew K. Hirsch, Jaemin Hong, Chandrakana Nandi

SIGPLAN PL Perspectives Blog, March 2021

4. *Algebraic Combinatorial Testing* (Poster)

Harrison Goldstein

POPL 2020

## Employment

1. *Research Intern*

Galois, Inc. 2023

Worked on two research papers related to the SafeDocs DARPA program. Provided expertise on testing that helped situate the papers in the broader research context.

2. *Research Intern*

Amazon Web Services 2020

Worked on Zelkova, a tool for analyzing and proving properties about AWS access policies. Encoded logical constraints from access policies as SMT formulas, in order to infer policy implications.

3. *Software Engineer and Software Engineering Intern*

Broadway Technology 2017–2019

Built mission-critical internal tools for the company's financial personnel, in particular facilitating a transition to new financial tracking software. Designed and implemented data connectors, financial calculations, web interfaces, and more.

4. *Technology Intern*

Susquehanna International Group, LLC 2016

Helped to implement a safety system, protecting the firm from anomalous trading behaviors. Built an engine for executing business rules as monitors for live trading activities.

5. *Chief Technology Officer*

Last Second Beach, LLC 2015–2016

Helped to lead a small, early stage start-up, focused on providing one-price vacations. Built a demo iOS application, helping the company to win a \$25,000 grant as part of a Business Plan Competition.



## Service

### Conference Organizing and Reviewing

1. *Steering Committee Member*, NJPLS — Ongoing
2. *Reviewer*, PLATEAU 2024
3. *PC Member*, HATRA 2023
4. *Organizer*, NJPLS 2023
5. *Social Chair*, POPL 2021
6. *A/V Coordinator*, ICFP 2021

### Mentorship

1. *Ph.D. Mentor*, SIGPLAN-M
2. *Ph.D. Mentor*, Penn CIS Mentoring
3. *Speaker*, PL Mentoring Workshop @ POPL 2024
4. *Research Mentor*, REPL REU 2023
5. *Research Mentor*, DeepSpec REU

### Misc.

1. *Editor in Chief*, PLClub Blog

## Education

1. *Ph.D.* in Computer Science, University of Pennsylvania  
2019–2024
2. *M.Eng.* in Computer Science, Cornell University  
2018 — GPA 4.02
3. *B.S.* in Computer Science, Cornell University  
2014–2018 — GPA 4.08

## Teaching and Advising

### Courses

1. *Penn CIS 552 “Advanced Programming”*  
Prof. Stephanie Weirich  
Head TA 2020–2021
2. *Penn CIS 810 “Writing and Speaking with Style”*  
Prof. Benjamin C. Pierce  
Head TA 2021
3. *Cornell CS 3110*  
Prof. Nate Foster  
Head TA 2017
4. *Cornell Engineering Leadership*  
Prof. Erica Dawson and Werner Zorman  
Head TA 2017

5. Cornell CS 2112  
Prof. Dexter Kozen  
TA 2016

## Graduate Advisees

1. *Collaborator and Research Mentor*, Joseph W. Cutler
2. *Collaborator and Research Mentor*, Jessica Shi
3. *Co-Advisor*, Ernest Ng

## Grant Writing

1. *Amazon Research Award: Automated Reasoning*  
Spring 2023  
Secured funding from AWS to fund my ongoing work on user interfaces for property-based testing. This award includes the opportunity to collaborate with contacts at AWS, including Michael Hicks, on interfaces that support real industrial workloads.  
*Team: Harrison Goldstein* (primary author), Benjamin Pierce (co-PI), Andrew Head (co-PI)

## Awards and Honors

1. *Victor Basili Postdoctoral Fellowship*  
University of Maryland, Computer Science Department
2. *Distinguished Paper (Property-Based Testing in Practice)*  
ICSE 2024
3. *Distinguished Paper (Reflecting on Random Generation)*  
ICFP 2023
4. *Certificate in Engineering Leadership*  
Cornell Engineering Leadership Certification Program
5. *1<sup>st</sup> Place, Business Plan Competition*  
Cornell School of Hotel Administration