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## Education

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

M.Eng. in Computer Science
**Cornell University**

B.S. in Computer Science
**Cornell University**

## 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

John C. Reynolds Doctoral
Dissertation Award
**ACM SIGPLAN**

Victor Basili Postdoctoral
Fellowship
**University of Maryland**

# Harrison Goldstein
## Assistant Professor, University at Buffalo

I am an incoming professor in the Department of Computer Science and Engineering at the University at Buffalo, SUNY. Currently, I am finishing up a postdoc at the University of Maryland, working with Leo Lampropoulos as a Victor Basili Postdoctoral Fellow. My work focuses on usable tools for formal software correctness.

## Selected Publications

**Property-Based Testing for the People**
Dissertation

**Tyche: Making Sense of Property-Based Testing Effectiveness**
UIST 2024 Research Paper

**Property-Based Testing in Practice**   Distinguished Paper
ICSE 2024 Research Paper

**Reflecting on Random Generation**   Distinguished Paper
ICFP 2023 Research Paper

**Parsing Randomness**
OOPSLA 2022 Research Paper

## Grants

**NSF #2402449 SHF: Medium: Usable Property-Based Testing**
National Science Foundation

**TYCHE: An IDE for Property-Based Testing**
Amazon Research Award 2023

## Employment

**University at Buffalo, SUNY**
Assistant Professor 2025-

**University of Maryland, College Park**
Victor Basili Postdoctoral Fellow 2024-2025

**Galois, Inc.**
Research Intern 2023

## Selected Service Roles

| | |
|---|---|
| **Steering Committee Member** NJPLS Ongoing | **Research Mentor** DeepSpec REU |
| **Speaker** PLMW (POPL'24, ICFP'24) | **Organizer** NJPLS 2023 |
| **Research Mentor** REPL REU 2023, 2024 | **Social Chair** POPL 2021 |
| **PC Member** HATRA 2023 | **A/V Coordinator** ICFP 2021 |

I am an incoming professor in the Department of Computer Science and Engineering at the University at Buffalo, SUNY. Currently, I am finishing up a postdoc at the University of Maryland, working with Leo Lampropoulos as a Victor Basili Postdoctoral Fellow. My work focuses on usable tools for formal software correctness.

# Publications, Talks, and Grants

## Dissertation

**Property-Based Testing for the People**
Harrison Goldstein
*advised by* Benjamin C. Pierce
*approved by* Stephanie Weirich (committee chair), Andrew Head, Mayur Naik, Hila Peleg
Defended May 24, 2024

## Refereed Conference Publications

OOPSLA'25   **QED in Context: An Observation Study of Proof Assistant Users**
Jessica Shi, Cassia Torczon, **Harrison Goldstein**, Benjamin C. Pierce, Andrew Head
Obj.-Oriented Programming, Systs., Langs., and Apps. (OOPSLA) 2025. 25 pages.

UIST'24   **Tyche: Making Sense of Property-Based Tesing Effectiveness**
**Harrison Goldstein**, Jeffrey Tao, Zac Hatfield-Dodds, Benjamin C. Pierce, Andrew Head
User Interface Software and Technology (UIST) 2024. 13 pages.

PLDI'24   **Stream Types**
J. W. Cutler, C. Watson, E. Nkurumeh, P. Hilliard, **H. Goldstein**, C. Stanford, B. C. Pierce
Programming Language Design and Impl. (PLDI) 2024. 24 pages.

PLDI'24   **Daedalus: Safer Document Parsing**
I. Diatchki, M. Dodds, **H. Goldstein**, B. Harris, D. Holland, B. Razet, C. Schlesinger, S. Winwood
Programming Language Design and Implementation (PLDI) 2024. 24 pages.

ICSE'24
Distinguished   **Property-Based Testing in Practice**
**Harrison Goldstein**, Joseph W. Cutler, Daniel Dickstein, Benjamin C. Pierce, Andrew Head
International Conference on Software Engineering (ICSE) 2024. 23 pages.

ICFP'23
Distinguished   **Reflecting on Random Generation**
**Harrison Goldstein**, Samantha Frohlich, Meng Wang, Benjamin C. Pierce
International Conference on Functional Programming (ICFP) 2023. 34 pages.

OOPSLA'22   **Parsing Randomness**
**Harrison Goldstein**, Benjamin C. Pierce
Obj.-Oriented Programming, Systs., Langs., and Apps. (OOPSLA) 2022. 25 pages.

ESOP'21   **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. 27 pages.

## Workshop Papers and Experience Reports

PLATEAU'25    **Designing Proof Deautomation in Rocq**
Jessica Shi, Cassia Torczon, **Harrison Goldstein**, Benjamin C. Pierce, Andrew Head
PLATEAU Workshop 2025. 12 pages.

OCaml'24    **Mica: Automated Differential Testing for OCaml Modules**
Ernest Ng, **Harrison Goldstein**, Benjamin C. Pierce
OCaml Workshop 2024. 2 pages.

ICFP'23    **Etna: An Evaluation Platform for Property-Based Testing (Experience Report)**
J. Shi, A. Kelles, **H. Goldstein**, B. C. Pierce, L. Lampropoulos
International Conference on Functional Programming (ICFP) 2023. 17 pages.

HATRA'22    **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. 8 pages.

SysML'18    **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. 3 pages.

## Demos

SCF'24    **Demonstrating FEDT: Supporting Characterization Experiments in Fabrication Research**
V. Savage, N. Püsök, **H. Goldstein**, C. Nandi, J. Yi Ren and L. Oehlberg
Symposium on Computational Fabrication (SCF) 2024.

UIST'23    **Tyche: In Situ Analysis of Random Testing Effectiveness**
**Harrison Goldstein**, Benjamin C. Pierce, Andrew Head
User Interface Software and Technology (UIST) 2023.

## Talks and Podcasts

Talk    **The Best New Programming Language is a Proof Assistant**
**Harrison Goldstein**
DC Systems 006, May 2025

Podcast
Invited    **Haskell Interlude 59**
Samantha Frohlich, Wouter Swierstra, **Harrison Goldstein**
Haskell Interlude Podcast, December 2024

Talk
Invited    **My PhD Compass: 6 Ways to Guide a PhD Towards Success**
**Harrison Goldstein**
PL Mentoring Workshop @ ICFP, September 2024

Podcast
Invited    **Harry Goldstein | Property-Based Testing | #55**
Jack Waudby, **Harrison Goldstein**
Disseminate Podcast, June 2024

Talk    **Usable Property-Based Testing**
**Harrison Goldstein**
Amazon Web Services, June 2024

Talk
Invited    **Consider Collaboration**
Samantha Frohlich, **Harrison Goldstein**
PL Mentoring Workshop @ POPL, January 2024

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|---|---|
| Talk<br>*Invited* | **Advancing Property-Based Testing in Theory and Practice**<br>**Harrison Goldstein**<br>Microsoft Research, UC Berkeley, Galois, Inc., UCSC, University of Bristol |
| Talk | **Property-Based Testing in Practice**<br>**Harrison Goldstein**<br>Jane Street Programming Languages Colloquium, December 2023 |
| Podcast<br>*Invited* | **TheForkJoin Episode 2**<br>Oliver Flatt, Rachit Nigam, **Harrison Goldstein**<br>TheForkJoin |
| Talk | **Some Problems with Properties**<br>**Harrison Goldstein**<br>NJPLS October 2022 |
| Talk | **Reflecting on Random Generation**<br>**Harrison Goldstein**<br>NJPLS May 2022 |

## Posters

| | |
|---|---|
| ICFP'21 | **Ungenerators**<br>**Harrison Goldstein**<br>ICFP 2021 |
| POPL'20 | **Algebraic Combinatorial Testing**<br>**Harrison Goldstein**<br>POPL 2020 |

## Drafts and Blog Posts

**Delimited Continuations and Monads**
**Harrison Goldstein**
Unpublished PhD Milestone Draft, April 2021

**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

## Funded Grant Proposals

**NSF #2402449 SHF: Medium: Usable Property-Based Testing**
2023-2024
Made significant contributions, in the form of both research project ideas and grant writing, to help secure a NSF Medium grant. This grant helped to fund my dissertation work, and it will continue to fund follow-on projects.
*Team*: Benjamin Pierce (co-PI), Andrew Head (co-PI), **Harrison Goldstein** (contributor)

**Amazon Research Award: TYCHE: An IDE for Property-Based Testing**
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)

# Education

**Ph.D. in Computer Science, University of Pennsylvania**
2019–2024

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

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

# Teaching and Advising

## Courses

**Penn CIS 552 "Advanced Programming"**
Prof. Stephanie Weirich
Head TA 2020-2021

**Penn CIS 810 "Writing and Speaking with Style"**
Prof. Benjamin C. Pierce
Head TA 2021

**Cornell CS 3110 "Functional Programming"**
Prof. Nate Foster
Head TA 2017

**Cornell Engineering Leadership**
Profs. Erica Dawson and Werner Zorman
Head TA 2017

**Cornell CS 2112 "Object-Oriented Design and Data Structures (Honors)"**
Prof. Dexter Kozen
TA 2016

## Graduate Advisees

Collaborator and Research Mentor, Cassia Torczon

Collaborator and Research Mentor, Thia Richey

Collaborator and Research Mentor, Segev Elazar Mittelman

Collaborator and Research Mentor, Alperen Keles

Collaborator and Research Mentor, Pierce Darragh

Collaborator and Research Mentor, Joseph W. Cutler

Collaborator and Research Mentor, Jessica Shi

Co-Advisor, Ernest Ng

# Service

## Conference Organizing and Reviewing

Steering Committee Member, Upstate PL — Ongoing

PC Member, OOPSLA 2026 — Upcoming

PC Member, PLDI 2025

PC Member, PLATEAU 2025

Steering Committee Member, NJPLS

Student Reviewer, PLATEAU 2024

Co-Organizer, Celebration for Benjamin Pierce's 60th Birthday

PC Member, HATRA 2023

Organizer, NJPLS 2023

Social Chair, POPL 2021

A/V Coordinator, ICFP 2021

## Mentorship

Speaker, PL Mentoring Workshop @ ICFP 2024

Ph.D. Mentor, SIGPLAN-M

Ph.D. Mentor, Penn CIS Mentoring

Speaker, PL Mentoring Workshop @ POPL 2024

Research Mentor, REPL REU 2023

Research Mentor, DeepSpec REU

## Misc.

Editor in Chief, PLClub Blog 2021-2024

# Awards and Honors

**John C. Reynolds Doctoral Dissertation Award 2025**
ACM Special Interest Group on Programming Languages

**Morris and Dorothy Rubinoff Award 2024**
University of Pennsylvania, Department of Computer and Information Science

**Victor Basili Postdoctoral Fellowship**
University of Maryland, Computer Science Department

**Certificate in Engineering Leadership**
Cornell Engineering Leadership Certification Program

**1000 Day Crossword Streak**
New York Times Games

# Employment

**University at Buffalo, SUNY**
*Assistant Professor 2025-*

**University of Maryland, College Park**
*Victor Basili Postdoctoral Fellow 2024-2025*
Working with Prof. Leonidas Lampropoulos on topics related to usable property-based testing.

**Galois, Inc.**
*Research Intern 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.

**Amazon Web Services**
*Research Intern 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.

**Broadway Technology**
*Software Engineer and Software Engineering Intern 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.

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

**Last Second Beach, LLC**
*Chief Technology Officer 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.