

# Will Crichton

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**Links:** [Website](#), [GitHub](#), [Mastodon](#)

## Education



















- 2016-22 **Stanford University**, Ph.D. in Computer Science.  
Advised by [Pat Hanrahan](#) and [Maneesh Agrawala](#).
- 2012-16 **Carnegie Mellon University**, B.S. in Computer Science.  
Advised by [Kayvon Fatahalian](#).

## Academic Employment




- 2025- **Brown University**, Assistant professor of Computer Science.
- 2022-2025 **Brown University**, Postdoctoral researcher in Computer Science.  
Advised by [Shriram Krishnamurthi](#).

## Research

### CONFERENCE PUBLICATIONS

- PLDI '25 **An Interactive Debugger for Rust Trait Errors.**  
  Gavin Gray, [Will Crichton](#), Shriram Krishnamurthi.
- POPL '24 **A Core Calculus for Documents.**  
   [Will Crichton](#), Shriram Krishnamurthi.
- OOPSLA '24 **Profiling Programming Language Learning.**  
  [Will Crichton](#), Shriram Krishnamurthi.  
*Distinguished Paper.*
- OOPSLA '23 **A Grounded Conceptual Model for Ownership Types in Rust.**  
   [Will Crichton](#), Gavin Gray, Shriram Krishnamurthi.  
*SIGPLAN Research Highlight.*
- PLDI '22 **Modular Information Flow through Ownership.**  
   [Will Crichton](#), Marco Patrignani, Maneesh Agrawala, Pat Hanrahan.
- CHI '21 **The Role of Working Memory in Program Tracing.**  
  [Will Crichton](#), Maneesh Agrawala, Pat Hanrahan.  
*Featured in the MIT PL Review.*
- SIGCSE '21 **Automating Program Structure Classification.**  
  [Will Crichton](#), Georgia Gabriela Sampaio, Pat Hanrahan.
- KDD '21 **Analysis of Faces in a Decade of US Cable TV News.**  
 James Hong, [Will Crichton](#), Haotian Zhang, Daniel Y. Fu, Jacob Ritchie, Jeremy Barenholtz, Ben Hannel, Xinwei Yao, Michaela Murray, Geraldine Moriba, Maneesh Agrawala, Kayvon Fatahalian.

#### LEGEND:

-  = paper  
 = talk recording  
 = GitHub repo


SIGGRAPH '18 **Scanner: Efficient Video Analysis at Scale.**  
 Fait Poms, [Will Crichton](#), Pat Hanrahan, Kayvon Fatahalian.

## WORKSHOP PUBLICATIONS

FUNARCH '23 **Typed Design Patterns for the Functional Era.**  
 [Will Crichton](#).

HATRA '23 **Debugging Trait Errors as Logic Programs.**  
 Gavin Gray, [Will Crichton](#).

HATRA '21 **A New Medium for Communicating Research on Programming Languages.**  
 [Will Crichton](#).

PLATEAU '20 **Documentation Generation as Information Visualization.**  
 [Will Crichton](#).

HATRA '20 **The Usability of Ownership.**  
 [Will Crichton](#).


PLATEAU '19 **Human-Centric Program Synthesis.**  
 [Will Crichton](#).


SNAPL '19 **From Theory to Systems: A Grounded Approach to Programming Language Education.**  
 [Will Crichton](#).

AI SYSTEMS '19 **Rekall: Specifying Video Events using Compositions of Spatiotemporal Labels.**  
 Daniel Y. Fu, [Will Crichton](#), James Hong, Xinwei Yao, Haotian Zhang, Anh Truong, Avanika Narayan, Maneesh Agrawala, Christopher Ré, Kayvon Fatahalian.

PLATEAU '18 **Identifying Barriers to Adoption for Rust through Online Discourse.**  
 Anna Zeng, [Will Crichton](#).

## THESES

STANFORD '22 **Revisiting Program Slicing with Ownership-based Information Flow.**  
 [Will Crichton](#).


CMU '16 **Lantern: A Query Language for Visual Concept Retrieval.**  
 [Will Crichton](#).

## Invited Talks

2024 **The Performance Engineer's Toolkit.**  
 Presented at [P99 Conf](#).



2024 **Visualizing and Explaining Rust's Ownership Model.**  
 Keynote at the IWACO workshop at OOSPLA 2024.

2024 **How to Make Mathematicians Into Programmers (And Vice Versa).**  
 Presented at the [Topos Institute Colloquium](#).

2024 **Building a Human-Centered Science of Programming.**  


- Pomona College CS Colloquium
- Boston University POPV Seminar

2023 **The Art and Science of Teaching Rust.**  
 Presented at [RustConf](#).

- 2022-23 **Cognitive Design Principles for Programming Tools.**
- MIT HCI Seminar
  - Northeastern PL Seminar
  - Tufts PL Seminar
  - Georgia Tech PL/SE Seminar
  - Barnard CS Seminar
- 2022-23  **Modular Information Flow through Ownership.**
- UC Santa Cruz LSD Seminar
  - Amazon Web Services
  - Rust Formal Methods Interest Group
- 2022 **The Design of [Nota](#).**  
Guest lecture for Jeff Heer's course at UW CSE 599D: "[The Future of Scholarly Communication](#)".
- 2021  **Type-Driven API Design in Rust.**  
Presented at [Strange Loop](#).
- 2019 **Video Analysis at Scale in the Era of Deep Learning.**  
Presented at the [Monterey Bay Aquarium Research Institute](#) Research Seminar.
- 2018 **Data Mining 70,000 Hours of TV News.**  
Presented at the "Audiovisual Collections" conference at the [National Library of Sweden](#).

## Teaching

### INSTRUCTOR

- FALL 2017-19 **Programming Languages** ([CS 242](#)). Stanford (3×).
- FALL 2013-14 **Game Development on the Web** (1-unit mini course). CMU (2×).

### TEACHING ASSISTANT

- SPRING 2017 **Computer Systems from the Ground Up** ([CS 107e](#)). Stanford.
- FALL 2015 **Compiler Design** ([15-411](#)). CMU.
- SPRING 2015 **Parallel Computer Architecture and Programming** ([15-418](#)). CMU.
- FALL 2014 **Parallel and Sequential Data Structures and Algorithms** ([15-210](#)). CMU (Head TA).
- SPRING 2014 **Parallel and Sequential Data Structures and Algorithms** ([15-210](#)). CMU.
- FALL 2013 **Functional Programming** ([15-150](#)). CMU.

## Funding

- 2024-25 **DARPA grant #HR00112420354**, "Transitioning Rust Users at Scale with Tutoring" (TRUST), for several Rust-related education and usability projects.
- 2023 **NSF grant #2227863** under Formal Methods in the Field Track II for the [Rust Book Experiment](#).
- 2022 **Amazon Web Services research gift** for the [Rust Book Experiment](#).
- 2018 **Magic Grant** from the [David and Helen Gurley Brown Institute](#) for the [TV News project](#).
- 2017 **Magic Grant** from the [David and Helen Gurley Brown Institute](#) for the [Esper project](#).

## Professional Service

### ACADEMIC COMMUNITY SERVICE

**PC** = Program Committee, **OC** = Organizing Committee, **ERC** = External Review Committee, **ER** = External Reviewer

2026	<b>PC:</b> OOPSLA, <b>OC:</b> HATRA
2025	<b>PC:</b> PLDI, VL/HCC <b>OC:</b> HATRA, <b>ER:</b> OOPSLA, ⟨Programming⟩, PLATEAU
2024	<b>ERC:</b> OOPSLA, <b>PC:</b> Onward!, <b>OC:</b> HATRA, <b>ER:</b> CHI, UIST
2023	<b>ERC:</b> OOPSLA, <b>OC:</b> HATRA, <b>ER:</b> CHI, UIST
2022	<b>PC:</b> HATRA, <b>ER:</b> CHI, UIST
2021	<b>PC:</b> HATRA, <b>ER:</b> SIGGRAPH, SIGGRAPH Asia
2020	<b>ER:</b> UIST
2019	<b>ER:</b> SIGGRAPH Asia

### UNIVERSITY SERVICE

2024-25	<b>exploreCSR Mentor</b> Participated as a mentor in Brown's <a href="#">exploreCSR</a> program, helping undergraduate students from diverse backgrounds get into CS systems research.
2016-22	<b>Ph.D. Admit Weekend Organizer</b> Ran events, comms, Q&A panels, and social activities for admitted students. Awarded the Stanford CS Department Student Service Award all six years for volunteering in this role.
2019	<b>Undergraduate Summer Research Program Organizer</b> Managed the <a href="#">CURIS</a> program by running weekly events and facilitating student/faculty relations.

## Industry Employment

SUMMER 2017	<b>Snap, Inc.</b> Research intern. Designed an elastic and fault-tolerant distributed system for video analytics using Kubernetes, reducing operational costs up to 10×.
SUMMER 2015	<b>Jane Street Capital.</b> Software intern. <a href="#">Reduced GC overhead</a> in OCaml language runtime. Designed new parallelization strategy for <a href="#">incremental computation library</a> .
2015	<b>Exp.ii.</b> Web developer. Architected web front-end for education startup, managed hiring pipeline for new developers.
SUMMER 2014	<b>Defense-Related Startup I Regret Working For.</b> Software intern. Developed logic engine for case management system.
SUMMER 2013	<b>Tunessence.</b> Web developer. Built interactive guitar tab learning tool for guitar learning startup.
SUMMER 2012	<b>Pioneer Hi-Bred.</b> Software engineer. Built BI app for analysis of laboratory efficiency in Pioneer agricultural technology labs.
2010-12	<b>Webspec Design.</b> Web developer. Created 30+ websites for clients across the country.

*Last updated June 19, 2025.*