Will Crichton

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Links: Personal Website, Lab 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

Legend:
= paper
= talk recording
= GitHub repo

Conference publications

OSDI '25 **Paralegal: Practical Static Analysis for Privacy Bugs.**
Justus Adam, Carolyn Zech, Livia Zhu, Sreshtaa Rajesh, Nathan Harbison, Mithi Jethwa, Will Crichton, Shriram Krishnamurthi, Malte Schwarzkopf.

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.
Featured in the SIGPLAN and Communications of the ACM Research Highlights.

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.

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

Workshop publications

NLR & SE '24 **WatChat: Explaining perplexing programs by debugging mental models.**
Kartik Chandra, Katherine M. Collins, Will Crichton, Tony Chen, Tzu-Mao Li, Adrian Weller, Rachit Nigam, Joshua Tenenbaum, Jonathana Ragan-Kelley.

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

2025 **Rust for Everyone!**
Jane Street.

2024 **Visualizing and Explaining Rust's Ownership Model.**
IWACO.

2024 **How to Make Mathematicians Into Programmers (And Vice Versa).**
Topos Institute Colloquium.

2021 **Type-Driven API Design in Rust.**
Strange Loop.

2023 **The Art and Science of Teaching Rust.**
RustConf.

2023 **The Next Generation of Document Languages.**
UC Berkeley Programming Systems Seminar.

2024 **The Performance Engineer's Toolkit.**
P99 CONF.

Teaching

Instructor

FALL 2025 **Program Analysis** (CSCI 1951Q). Brown.

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 **PC:** OOPSLA, **OC:** HATRA, **ER**: CHI, PLATEAU

2025 **PC:** PLDI, VL/HCC **OC:** HATRA, **ER:** OOPSLA, ⟨Programming⟩, PLATEAU

2024 **ERC:** OOPSLA, **PC:** Onward!, **OC:** HATRA, **ER:** CHI, UIST

2023 **ERC:** OOPSLA, **OC:** HATRA, **ER:** CHI, UIST

2022 **PC:** HATRA, **ER:** CHI, UIST

2021 **PC:** HATRA, **ER:** SIGGRAPH, SIGGRAPH Asia

2020 **ER:** UIST

2019 **ER:** SIGGRAPH Asia

University Service

2024-25 **exploreCSR Mentor**
Participated as a mentor in Brown's exploreCSR program, helping undergraduate students from diverse backgrounds get into CS systems research.

2016-22 **Ph.D. Admit Weekend Organizer**
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 **Undergraduate Summer Research Program Organizer**
Managed the CURIS program by running weekly events and facilitating student/faculty relations.

Industry Employment

SUMMER 2017 **Snap, Inc.** Research intern. Designed an elastic and fault-tolerant distributed system for video analytics using Kubernetes, reducing operational costs up to 10×.

SUMMER 2015 **Jane Street Capital**. Software intern. Reduced GC overhead in OCaml language runtime. Designed new parallelization strategy for incremental computation library.

2015 **Expii**. Web developer. Architected web front-end for education startup, managed hiring pipeline for new developers.

SUMMER 2014 **Startup I Regret Working For**. Software intern. Developed logic engine for case management system.

SUMMER 2013 **Tunessence**. Web developer. Built interactive guitar tab learning tool for guitar learning startup.

SUMMER 2012 **Pioneer Hi-Bred**. Software engineer. Built BI app for analysis of laboratory efficiency in Pioneer agricultural technology labs.

2010-12 **Webspec Design**. Web developer. Created 30+ websites for clients across the country.

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