# Will Crichton

Email: wcrichto@brown.edu Website: https://willcrichton.net GitHub: https://github.com/willcrichton Twitter: https://twitter.com/tonofcrates

## 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

**Brown University**, Assistant professor of Computer Science.

2022-2025 **Brown University**, Postdoctoral researcher in Computer Science. Advised by Shriram Krishnamurthi.

### Research

Conference publications

- OOPSLA '24 Profiling Programming Language Learning.
   Will Crichton, Shriram Krishnamurthi.
   POPL '24 A Core Calculus for Documents.
   ♥ ♥ Will Crichton, Shriram Krishnamurthi.
   OOPSLA '23 A Grounded Conceptual Model for Ownership Types in Rust.
   ♥ ♥ Will Crichton, Gavin Gray, Shriram Krishnamurthi.
- PLDI'22
   Modular Information Flow through Ownership.

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- CHI <sup>2</sup><sub>21</sub> **The Role of Working Memory in Program Tracing**. Will Crichton Maneesh Agrawala Pat Hanrahan
- Will Crichton, Maneesh Agrawala, Pat Hanrahan.
   Featured in the MIT Programming Languages Review.
- SIGCSE '21 Automating Program Structure Classification.
- **Will Crichton**, Georgia Gabriela Sampaio, Pat Hanrahan.
- KDD '21Analysis of Faces in a Decade of US Cable TV News.☑ ∅James Hong, Will Crichton, Haotian Zhang, Daniel Y. Fu, Jacob Ritchie,<br/>Jeremy Barenholtz, Ben Hannel, Xinwei Yao, Michaela Murray, Geraldine

#### SIGGRAPH '18 Scanner: Efficient Video Analysis at Scale.

🖉 🛎 🗘 👘 Fait Poms, <u>Will Crichton</u>, Pat Hanrahan, and Kayvon Fatahalian.

Moriba, Maneesh Agrawala, Kayvon Fatahalian.

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WORKSHOP PUBLICATIONS

FUNARCH '23	<b>Typed Design Patterns for the Functional Era.</b> <u>Will Crichton</u> .
HATRA '21	A New Medium for Communicating Research on Programming Languages. Will Crichton.
HATRA '20	The Usability of Ownership. Will Crichton.
PLATEAU '20 📝 📽	Documentation Generation as Information Visualization. Will Crichton.
AI Systems @ SOSP '19 ☑ Ω	<b>Rekall: Specifying Video Events using Compositions of Spatiotemporal Labels</b> . Daniel Y. Fu, <u>Will Crichton</u> , James Hong, Xinwei Yao, Haotian Zhang, Anh Truong, Avanika Narayan, Maneesh Agrawala, Christopher Ré, and Kayvon Fatahalian.
SNAPL '19 📝 🔗	From Theory to Systems: A Grounded Approach to Programming Language Education. Will Crichton.
PLATEAU'18	<b>Identifying Barriers to Adoption for Rust through Online Discourse</b> . Anna Zeng, <u>Will Crichton</u> .
	Theses
2022	<b>Revisiting Program Slicing with Ownership-based Information Flow</b> . Ph.D. thesis at Stanford.
2016	Lantern: A Query Language for Visual Concept Retrieval. Bachelor's thesis at CMU. Received Alumni Award for Undergraduate Excellence.
	Invited Talks
2023	The Art and Science of Teaching Rust. Presented at RustConf.
2022-23	Cognitive Design Principles for Programming Tools.
	<ul> <li>MIT HCI Seminar</li> <li>Northeastern PL Seminar</li> <li>Tufts PL Seminar</li> <li>Georgia Tech PL/SE Seminar</li> <li>Barnard CS Seminar</li> </ul>
2022-23	Modular Information Flow through Ownership.
.8	<ul> <li>UC Santa Cruz LSD Seminar</li> <li>Amazon Web Services</li> <li>Rust Formal Methods Interest Group</li> </ul>
2022	<b>The Design of Nota.</b> Guest lecture for Jeff Heer's course at UW CSE 599D: "The Future of Scholarly Communication".
2021	<b>Type-Driven API Design in Rust.</b> 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 (3x).
- fall 2013-14 Game Development on the Web (1-unit mini course). CMU (2x).

#### 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

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

#### **Organizing Committee**

- · 2024: HATRA
- · 2023: HATRA

#### **Program Committee**

- · 2024: Onward!
- · 2022: HATRA
- · 2021: HATRA

#### **External Review Committee**

- · 2024: OOPSLA
- · 2023: OOPSLA

#### Reviewer

- · 2024: OOPSLA, CHI, UIST
- · 2023: OOPSLA, CHI, UIST
- · 2022: CHI, UIST
- $\cdot\,$  2021: SIGGRAPH, SIGGRAPH Asia
- · 2020: UIST
- · 2019: SIGGRAPH Asia

UNIVERSITY SERVICE

2016-2022	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	<b>Snap, Inc.</b> Research intern. Designed an elastic and fault-tolerant distributed system for video analyt-
	ics using Kubernetes, reducing operational costs up to $10 \times$ .
summer 2015	Jane Street Capital. Software intern. Reduced GC overhead in OCaml language runtime. Designed
	new parallelization strategy for incremental computation library.
2015	<b>Expii</b> . Web developer. Architected web front-end for education startup, managed hiring pipeline for
	new developers.
summer 2014	Palantir Technologies. 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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