

# Will Crichton

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## Abstract

I make programming tools easier to learn, use, and debug. I draw on research in programming languages, human-computer interaction, software engineering, cognitive science, and learning science to answer questions like: What are [cognitive design principles](#) for programming tools? How do you teach someone to [think mathematically](#) about programming? What are the most useful applications of [program synthesis](#)? And why have we learned so little about the psychology of programming in the last 50 years?

## Education

- 2016-now **Stanford University**, Ph.D. in Computer Science.  
Advised by Pat Hanrahan
- 2012-16 **Carnegie Mellon University**, B.S. in Computer Science, minor in Chinese Studies.  
Advised by Kayvon Fatahalian

## Research

- 2017-20 **Analyzing Who and What Appears 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. arXiv 2020.
- 2019 **Human-Centric Program Synthesis.**   
[Will Crichton](#). PLATEAU @ UIST 2019.
- 2018-19 **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, and Kayvon Fatahalian. AI Systems @ SOSP 2019.
- 2017-19 **From Theory to Systems: A Grounded Approach to Programming Language Education.**   
[Will Crichton](#). SNAPL 2019.
- 2018 **Identifying Barriers to Adoption for Rust through Online Discourse.**   
Anna Zeng, [Will Crichton](#). PLATEAU @ SPLASH 2018.
- 2016-19 **Scanner: Efficient Video Analysis at Scale.**    
Alex Poms, [Will Crichton](#), Pat Hanrahan, and Kayvon Fatahalian. SIGGRAPH 2018.
- 2015 **Lantern: A Query Language for Visual Concept Retrieval.**   
Senior thesis, advised by Kayvon Fatahalian.

## Awards

- 2017-19 **Magic Grant** from the Brown Institute for Media Innovation for the [Esper project](#) (awarded twice).
- 2015 **Alumni Award for Undergraduate Excellence** for senior thesis at CMU.

## Teaching

- fall 2017-19 **Programming Languages (CS 242)**. Instructor, Stanford.
- spring 2017 **Computer Systems from the Ground Up (CS 107e)**. TA, Stanford.
- fall 2015 **Compiler Design (15-411)**. TA, CMU.
- spring 2015 **Parallel Computer Architecture and Programming (15-418)**. TA, CMU.
- spring/fall 2014 **Parallel and Sequential Data Structures and Algorithms (15-210)**. TA, CMU.
- fall 2013-14 **Game Development on the Web** (1-unit mini course). Instructor, CMU.
- fall 2013 **Functional Programming (15-150)**. TA, CMU.

## Work

- summer 2017 **Snap, Inc.** Research intern. Designed elastic video analytics system on Kubernetes, reducing operational costs up to  $10\times$ .
- summer 2015 **Jane Street Capital.** Software engineering intern. Optimized memory allocation in OCaml language runtime. Designed new parallelization strategy for incremental computation library.
- 2015 **Exp.ii.** Web developer. Architected web front-end for education startup.
- summer 2014 **Palantir Technologies.** Software engineering intern. Developed business 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 labs.
- 2010-12 **Webspec Design.** Web developer. Created 30+ websites for clients across the country.