## Shaon Barman

## Curriculum Vitae

<u>200</u>5

2009

Berkeley, CA 

⋈ shaon.barman@gmail.com

Education

Ph.D. in Computer Science, University of California, Berkeley, GPA: 3.85.

Emphasis in Programming Languages

**B.S. in Computer Science**, *University of Texas at Austin*, GPA: 3.98.

Turing Scholars (CS Honors Program) and Dean Scholars Programs

PhD thesis

Title End-User Record and Replay for the Web

Advisor Ras Bodik

Description This thesis explores the design of a record and replay system for webpages. Our system uses novel language features to faithfully replay a user's interactions. We also explore how record and replay can be used as a building block toward more expressive end-user applications.

Publications

Boyd, Nicholas, Brandon M. Anderson, Brent Townshend, Ryan Chow, Connor J. Stephens, Ramya Rangan, Matias Kaplan, Meredith Corley, Akshay Tambe, Yuzu Ido, Jake Yukich, Tabitha Tcheau, Ayah Abdeldayem, Gabriel Ferns, Harsh Patel, Shaon Barman, April Schleck, Adrian L. Sanborn, Stephan Eismann, and Raphael J. L. Townshend. "ATOM-1: A Foundation Model for RNA Structure and Function Built on Chemical Mapping Data". In: bioRxiv. eprint: https://www.biorxiv.org/content/early/2023/12/14/2023.12.13.571579.full.pdf.

Barman, Shaon, Sarah Chasins, Rastislav Bodik, and Sumit Gulwani. "Ringer: Web Automation by Demonstration". In: *Proceedings of the 2016 ACM SIGPLAN International Conference on Object-Oriented Programming, Systems, Languages, and Applications*. OOPSLA 2016. Amsterdam, Netherlands: ACM, pp. 748–764.

2016

2015	Barman, Shaon, Rastislav Bodik, Satish Chandra, Emina Torlak, Arka Bhattacharya, and David Culler. "Toward Tool Support for Interactive Synthesis". In: <i>Proceedings of the 2015 ACM International Symposium on New Ideas, New Paradigms, and Reflections on Programming &amp; Software</i> . Onward! 2015. Pittsburgh, Pennsylvania, United States: ACM.
2015	Chasins, Sarah, Shaon Barman, Rastislav Bodik, and Sumit Gulwani. "Browser Record and Replay As a Building Block for End-User Web Automation Tools". In: <i>Proceedings of the 24th International Conference on World Wide Web</i> . WWW '15 Companion. Florence, Italy: International World Wide Web Conferences Steering Committee, pp. 179–182.
2011	Barman, Shaon, Rastislav Bodik, Sagar Jain, Yewen Pu, Saurabh Srivastava, and Nicholas Tung. "Parallel Programming with Inductive Synthesis". In: <i>Proceedings of the 3rd USENIX Conference on Hot Topic in Parallelism</i> . HotPar'11. Berkeley, CA: USENIX Association, pp. 14–14.
2011	Chandra, Satish, Emina Torlak, Shaon Barman, and Rastislav Bodik. "Angelic Debugging". In: <i>Proceedings of the 33rd International Conference on Software Engineering</i> . ICSE '11. Waikiki, Honolulu, HI, USA: ACM, pp. 121–130.

Undergraduate Honors Thesis

Barman, Shaon. "Aster: Automatic abstract syntax". University of Texas at Austin.

of Programming Languages. POPL '10. Madrid, Spain: ACM, pp. 339-352.

Bodik, Rastislav, Satish Chandra, Joel Galenson, Doug Kimelman, Nicholas Tung, Shaon Barman, and Casey Rodarmor. "Programming with Angelic Nondeterminism". In: *Proceedings of the 37th Annual ACM SIGPLAN-SIGACT Symposium on Principles* 

## Work Experience

2010

2009

**Software Engineer Consultant**, *Picoyune*, Nov 2022 to April 2023, May 2024 to Current.

Improved firmware powering a handheld air mercury monitor to a market-ready state. This work included implementing a watchdog timer to prevent the device from damaging itself, implementing a charging interface, and reducing sensor noise by 25%.

Resolved customer pain points with the desktop Python application. This work included developing a signed application installer and developing a protocol to download data from the device without errors.

Developed prototypes to test new product directions, such as measuring mercury in water and high/low concentration modes.

2023 Senior Software Engineer, Atomic AI, June 2023 to March 2024. Built a React front-end to visualize bioinformatics data and to launch data analysis pipelines. This allowed biologists to independently process and analyze their data, when previously they would need to request support to run an analysis pipeline. Maintained a Kubernetes cluster used by ML researchers across AWS, GCP and on premise machines. Contributed to the migration from Terraform to Pulumi to manage this system. 2017 **Software Engineer**, *Twitter*, Nov 2017 to April 2022. Senior SWE (Feb 2020 to current), SWE II (Nov 2017 to Feb 2020) Developed systems used to enforce Twitter's policies, including systems for reporting content, agent review and actioning violating content. • Improved the policy implementation lifecycle through multiple initiatives and projects. Proposed, designed and led a large infrastructure project to automate complex policy logic, reducing cognitive load on agents and increasing data quality for analytics. • Proposed and designed a new configuration-based architecture that would reduce the time to launch a new policy from 4 weeks to < 3 days. Served as tech lead for two years. Guided the team's technical strategy. Proposed a team reorganization, which was accepted, that allowed for more focused team objectives. Mentored multiple team members on both technical and career issues, including my replacement as tech lead. Contributed to company growth by conducting >80 interviews. Handled a number of high severity user-facing incidents and eliminated major sources of oncall interruptions. Proposed a set of oncall guidelines in order to create a standard process, which was adopted by the team. 2016 Full Stack Software Engineer, Captricity, May 2016 to May 2017. Created benchmark to fix reliability issues, leading to a 10x speedup of a major bottleneck Developed a new backend for Celery (a distributed task queue) using Redis sorted sets, allowing Celery to prioritize tasks based upon a due date Built a monitoring system for Celery to proactively identify and retry failed tasks Increased Mechanical Turk worker efficiency by implementing a scrolling UI in Angular Refactored accounting code to charge for new features and fix concurrency issues 2011 **Software Engineer Intern**, *Mozilla*, May 2011 to August 2011. Implemented initial prototype of a PDF reader written in Javascript (pdf.js) 2010 Research Intern, IBM Research, May 2010 to July 2010. Implemented a fault localization tool using symbolic programming 2008 **Software Engineer Intern**, *Google*, May 2008 to August 2008. Worked on AdWords Front End Conversion Tracking Implemented new UI to integrate AdWords and Analytics 2007 **Software Development Engineer Intern**, *Microsoft*, May 2007 to August 2007. Worked on System Center Service Manger Integrated PowerShell into the existing task infrastructure 2006 Student Programmer, UT Austin Department of Integrative Biology, January 2006 to May 2006. Implemented algorithms to analyze correlations in DNA sequences

**Summer Intern**, *BP*, May 2005 to August 2005.

2005

Learned basic SQL and data mining techniques

Worked within a large database used to schedule work on oil platforms

	Teaching Experience
2014	CS 164: Hack Your Language!, Teaching Assistant, Professor Ras Bodik, Fall 2014. Received 4.8 / 5.0 from student reviews
	CS 164: Hack Your Language!, Lead Teaching Assistant, Professor Ras Bodik, Spring 2012.  Received 4.0 / 5.0 from student reviews
	Volunteer Experience
202	
2025	<sup>3</sup> Alameda County CASA, Court Appointed Special Advocate (CASA), Jan 2025 to Current.
2009	Advocate for foster youth in Alameda County
2015	Asha for Education, Project Steward, October 2009 to May 2015.
2014	Presented updates and funding requests for Jamghat, a children's shelter in Delhi
	<b>Techbridge</b> , <i>Mentor</i> , January 2014 to May 2014.  Mentored a group of high school girls working on projects involving Arduinos
2008	
2009	FIRST Robotics, <i>Mentor</i> , January 2008 to May 2009.  Helped mentor a high robotics team with the programming and construction of a robot
2006	Austin's Children Museum, Volunteer, June 2006.
•	Helped at a robotics camp teaching kids how to program Lego Mindstorms kits
	Selected Coursework
2015	Audited INFO 298: Bridging the Digital Divide, Instructor: Yahel Ben-David.  Learned about the Further Reach network, a wireless broadband ISP serving a rural, sparsely-populated area
2014	PH 290: Eat. Think. Design, Instructor: Jaspal Sandhu.
	Applied the design process to find new ways of increasing access to healthy foods within the Navajo Nation
2012	INFO 235: Cyberlaw, Instructor: Brian Carver.
	Wrote a Wikipedia article on the US Supreme Court case <i>United States v. Cotterman</i>
	<b>E 290e: Marketing Emerging Technologies</b> , <i>Instructor: Andrew Isaacs</i> . Wrote a business plan for Captricity, a startup which crowdsources text extraction
2010	CS 260: Human Computer Interaction, Instructor: Björn Hartmann.
	Developed a new IVR system for NextDrop, a project to crowdsource water availability information in the developing world
2010	CS 294: Cellphones as a Computing Platform, Instructor: Eric Brewer.
	Helped create a system to record EKGs using a Nokia N900 cell phone and inexpensive circuits
2009	CS 265: Dynamic Program Analysis, Testing, and Debugging, Instructor: Koushik Sen.
2009	CS 262a: Computer Systems, Instructor: Eric Brewer.

## Achievements

o Computing Research Assn.'s Outstanding Undergraduate Award-Honorable Mention (2009)