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Sarah E. Chasins

Research Mission

To democratize programming, especially to empower social scientists, journalists, data scientists, and other non-traditional programmers. To make programming tools so usable that automating a task is easier than teaching the same task to a human.

Areas of Specialization

Programming Languages · Program Synthesis · Human-Computer Interaction · Data Science · Computation for Social Science

Education

Expected 2019   **University of California, Berkeley**, *Ph.D.*, Computer Science.
Advisor: Rastislav Bodik

2012   **Swarthmore College**, *B.A. with Highest Honors*, Computer Science and Behavioral Economics.
Advisor: Tia Newhall

Selected Honors

- EECS Rising Stars, 2018
- ARCS Fellowship for Graduate Study
- NSF Graduate Research Fellow (NSF GRFP)
- UC Berkeley EECS Outstanding Graduate Student Instructor Award, 2014-2015
- Highest Honors (HHH), Swarthmore
- Second Place Winner, CRA Outstanding Undergraduate Researcher Award, 2012
- EECS Chair's Excellence Award, UC Berkeley
- First Place Winner, Grand Finals ACM Undergraduate Student Research Competition, 2011
- First Place Winner, SPLASH ACM Undergraduate Student Research Competition, 2011
- Phi Beta Kappa, Sigma Xi

Research Positions

2012-present   **University of California, Berkeley**, *Graduate Researcher*.
Advisor: **Rastislav Bodik**

2016-present   **University of Washington**, *Visiting Researcher*.
Advisor: **Rastislav Bodik**, Lab: **UW PLSE**

2015   **Microsoft Research**, *Graduate Research Intern*.
Advisor: **Michael Carbin**

2011   **Carnegie Mellon University**, *Undergraduate Research Intern*.
Advisor: **Jonathan Aldrich**

2010   **University of Notre Dame**, *Undergraduate Research Intern*.
Advisor: **Christian Poellabauer**

Selected Publications

UIST 18   **Sarah E. Chasins**, Maria Mueller, Rastislav Bodik, *Rousillon: Scraping Distributed Hierarchical Web Data*, Proceedings of the 31st Annual ACM Symposium on User Interface Software and Technology, (UIST 2018), Berlin, October 2018.

OOPSLA 17   **Sarah E. Chasins**, Rastislav Bodik, *Skip Blocks: Reusing Execution History to Accelerate Web Scripts*, Proceedings of the ACM on Programming Languages Volume 1 Issue OOPSLA, (OOPSLA 2017), Vancouver, October 2017.

CAV 17   **Sarah E. Chasins**, Phitchaya Mangpo Phothilimthana, *Data-Driven Synthesis of Full Probabilistic Programs*, Proceedings of the 29th International Conference on Computer Aided Verification, (CAV 2017), Heidelberg, July 2017.

OOPSLA 16   Shaon Barman, **Sarah E. Chasins**, Rastislav Bodik, Sumit Gulwani, *Ringer: Web Automation by Demonstration*, Proceedings of the 31st ACM SIGPLAN Proceedings of the International Conference on Object-Oriented Programming, Systems, Languages, and Applications, (OOPSLA 2016), Amsterdam, November 2016.

SYNT 16   **Sarah E. Chasins**, Julie Newcomb, *Using SyGuS to Synthesize Reactive Motion Plans*, Proceedings of the 5th Workshop on Synthesis, (SYNT@CAV 2016), Toronto, July 2016.

WWW 15   **Sarah E. Chasins**, Shaon Barman, Sumit Gulwani, Rastislav Bodik, *Browser Record and Replay as a Building Block for End-User Web Automation Tools*, Proceedings of the 24th International Conference on World Wide Web Companion, (WWW 2015), Florence, May 2015.

WWW 15   **Sarah E. Chasins**, Phitchaya Mangpo Phothilimthana, *Dicer: A Framework for Controlled, Large-Scale Web Experiments*, Proceedings of the 24th International Conference on World Wide Web Companion, (WWW 2015), Florence, May 2015.

PLATEAU 14   Joel Galenson, Cindy Rubio-Gonzalez, **Sarah E. Chasins**, Liang Gong, *Research.js: Evaluating Research Tool Usability on the Web*, Proceedings of the 5th Workshop on Evaluation and Usability of Programming Languages and Tools, (PLATEAU 2014), Portland, October 2014.

PLDI 14   Phitchaya Mangpo Phothilimthana, Tikhon Jelvis, Rohin Shah, Nishant Totla, **Sarah E. Chasins**, Rastislav Bodik, *Chlorophyll: Synthesis-Aided Compiler for Low-Power Spatial Architectures*, Proceedings of the 35th ACM SIGPLAN Conference on Programming Language Design and Implementation, (PLDI 2014), Edinburgh, June 2014.

OBT 13   Saurabh Srivastava, Tim Hsiau, **Sarah E. Chasins**, Jonathan Kotker, Yen-Sheng Ho, Paul Ruan, Jeff Tsui, Stephi Hamilton, Jene Li, J. Christopher Anderson, Sanjit A. Seshia, and Rastislav Bodik, *Biochemistry as a Programming Language*, Proceedings of Off the Beaten Track (OBT/POPL 2013), Rome, January 2013.

OOPSLA 11 **Sarah E. Chasins**, *Efficient Implementation of the Plaid Language*, Proceedings of the 26th Annual ACM SIGPLAN Conference on Object-Oriented Programming, Systems, Languages, and Applications Companion, (OOPSLA 2011), Portland, October 2011.

PhoneSense 10 Christopher Miller, **Sarah E. Chasins**, Carolyn Farris, Justin Varner, Curtis Carmony, Christian Poellabauer, *An Integrated Monitoring System for Mobile Phones*, Proceedings of the 1st International Workshop on Sensing for App Phones (PhoneSense 2010), Zurich, November 2010.

Social Science Papers

ASA 19 Ian Kennedy, Amandalynne Paullada, Chris Hess, **Sarah E. Chasins**, *Seattle Rental Ad Texts and Processes of Segregation*, Proceedings of the 114th Annual Meeting of the American Sociological Association (ASA 2019).

Cityscape 19 Chris Hess, Rebecca J. Walter, Arthur Acolin, **Sarah E. Chasins**, *Shaping Small Area Fair Market Rent Implementation to Respond to Diverse Housing Markets*, Cityscape Volume 23 (HUD Office of Policy Development and Research, November 2019).

PAA 19 Ian Kennedy, Amandalynne Paullada, Chris Hess, **Sarah E. Chasins**, *Seattle Rental Ad Texts and Processes of Segregation: Using Craigslist to Understand Neighborhood Perception Patterns*, Proceedings of the 88th Annual Meeting of the Population Association of America (PAA 2019).

PAA 18 Erin Carll, Chris Hess, Kyle Crowder, Jerry Herting, **Sarah E. Chasins**, Claire Lawry, Adam Kirstein, Logan Young, Ian Kennedy, *The Practices and Attitudes of Rental Property Owners/Managers in a Tight and Increasingly Regulated Housing Market*, Proceedings of the 87th Annual Meeting of the Population Association of America (PAA 2018).

Work in Progress

TOCE 18 Kyle Thayer, **Sarah E. Chasins**, Andrew J. Ko, *A Theory of Robust API Knowledge*, ACM Transactions on Computing Education Volume 18, (TOCE 2018), (in review, manuscript ID 0124).

Software

Helena PBD Tool, A programming-by-demonstration tool for writing web automation and web scraping programs. Demonstrate how to collect one row; tool synthesizes a program for collecting all rows.
`http://helena-lang.org, http://github.com/schasins/helena`

Helena Language, A web automation language that comes with a blocks-based programming environment.
`http://github.com/schasins/helena-lang`

DIYDA, DIY Digital Assistant, a voice assistant that users can extend with new 'skills.' Users use PBD to write Helena programs for adding cutsom functionality..
`http://github.com/schasins/helena-diy-digital-assistant`

Dapper, A synthesizer for producing Probabilistic Programming Language (PPL) models of input datasets..
`http://github.com/schasins/PPL-synthesis`

███ Invited Talks, Tutorials, and Other Presentations

2019 **Department of Geography Department Colloquium, University of Washington**, *Invited Talk*, Small Area Fair Market Rents, Craigslist Data, and Interdisciplinary Research Efforts.

2018 **Knowledge Graph Team Invited Talk, Amazon**, *Invited Talk*, Programming by Demonstration for Distributed Web Scraping.

2018 **Center for Studies in Demography and Ecology Workshop Series, University of Washington**, *Invited Tutorial (2 hours)*, Introduction to Web Scraping Using Helena.

2018 **PROBPROG 2018, MIT**, *Invited Talk*, Data-Driven Synthesis of Full Probabilistic Programs.

2018 **Rising Stars in Computer Science Lecture Series, University of Massachusetts Amherst**, *Invited Talk*, Helena: A Web Automation Language for End Users.

2018 **Computer Science Department Seminar, Swarthmore College**, *Invited Talk*, Helena: A Web Automation Language for End Users.

2018 **ASPLUW 2018, Bainbridge Island**, *Invited Talk*, Distributed Web Automation.

2018 **PNW PLSE 2018, Microsoft Research**, *Accepted Talk*, Helena: A Web Automation Language for End Users.

2018 **Distributed Systems Research Day 2018, University of Washington**, *Invited Talk*, Distributed Web Automation.

2017 **Department of Sociology Contexts Working Group, University of Washington**, *Invited Tutorial (1 hour)*, Programming Tools for End-User Web Data Extraction.

2017 **CSE 154: Web Programming, University of Washington**, *Invited Lecture*, Web Scraping.

2017 **Computer Science and Engineering Women's Research Day, University of Washington**, *Invited Talk*, Programming by Demonstration for Web Scraping.

2016 **Industry Affiliates Meeting, University of Washington**, *Invited Talk*, Programming by Demonstration for Web Scraping.

2015 **Microsoft Research**, *End-of-Internship Talk*, Language Support for Modular Training.

2014 **NSF ExCAPE (Expeditions in Computer Augmented Program Engineering) Annual Meeting**, *Invited Talk*, On Web Scraping by Demonstration for Social Scientists.

███ Selected Interdisciplinary Collaborations

Public Policy **Charitable Foundations and Advocacy: Institutional Change in the Philanthropic Sector**, *David F Suárez, Kelly Husted, Andreu Casas*, Evans School of Public Policy & Governance, University of Washington; Center for Data Science, New York University.

Sociology	**Craigslist Rental Ad Texts and Processes of Racial Segregation in Residential Areas**, *Ian Kennedy, Amandalynne Paullada, Chris Hess*, Department of Sociology, University of Washington.
Civil Engineering	**Effects of Hurricanes and Other Natural Disasters on Infrastructure Systems, Networks, and Human Mobility**, *Xiangyang Guan, Cynthia Chen*, Department of Civil and Environmental Engineering, University of Washington.
Sociology	**GoFundMe: Who Gets Funded and Why, with an Emphasis on Race and Sexual Orientation**, *Savannah H. Larimore, Nora J. Kenworthy*, Department of Sociology, University of Washington; School of Nursing & Health Studies, University of Washington Bothell.
Sociology	**Inter-Organization Connections Between Non-Profit Social and Health Service Organizations and the Effects on Service Delivery to Clients**, *Hannah Curtis Hansen, Jerald Herting*, Department of Sociology, University of Washington.
Political Science	**Mining Public Peruvian Governance Data for Public Policy Analysis and Improving Political Decision-Making**, *Jose Manuel Magallanes*, Department of Social Sciences, Pontificia Universidad Católica del Perú.
Sociology	**Practices and Attitudes of Rental Property Owners and Managers in a Tight and Increasingly Regulated Housing Market**, *Erin Carll, Chris Hess, Kyle Crowder, Jerry Herting, Claire Lawry, Adam Kirstein, Logan Young, Ian Kennedy*, Department of Sociology, University of Washington.
Economics	**Restaurant Review Data and the Effects of Minimum Wage Changes on Restaurants**, *Emma van Inwegen*, Leonard N. Stern School of Business, New York University.
Real Estate	**Shaping Small Area Fair Market Rent Thresholds to Make Housing Voucher Programs Responsive to Diverse Housing Markets**, *Chris Hess, Rebecca J. Walter, Arthur Acolin*, Runstad Department of Real Estate, College of Built Environments, University of Washington.
Civil Engineering	**Zimride Data for Training and Evaluating Novel Carpool Driver-Passenger Matching Algorithms**, *Cynthia Chen, Pengyu Yan*, Department of Civil and Environmental Engineering, University of Washington; School of Management and Economics, University of Electronic Science and Technology of China.

Service

2019	**Co-Organizer**, *PLATEAU 2019*.
2018	**SRC Reviewer, SRC Judge**, *SPLASH 2018*.
2018	**Co-Organizer**, *PLATEAU 2018*.
2017	**Co-Organizer, Program Committee**, *PLATEAU 2017*.
2017	**Submissions Chair**, *SNAPL 2017*.
2015	**Faculty Hiring Core**, *University of California, Berkeley*.
2011	**Faculty Hiring Committee**, *Swarthmore College*.

Formal Mentorship & Outreach

2017-present	**Mentor**, *University of Washington CSE Mentors Program*. Formal mentorship program for ongoing mentorship of three to four PhD students per year.
2017	**Speaker**, *University of Washington CSE Women's Research Day*.
various	**Research Presenter**, *ACM Undergraduate Research Night*.
2015-2016	**Coordinator**, *UC Berkeley EECS Peers*. Led a Berkeley EECS organization that provides near-peer mentorship to Ph.D. students.
2014-2017	**Mentor**, *UC Berkeley EECS Peers*.
2014	**Teacher**, *Techbridge Afterschool Program*, Oakland Unity High School, Oakland, CA.
2011-2012	**Founding Organizer**, *Swarthmore Women in CS*, Swarthmore College.

Research Mentorship

Ph.D.	**Julie Newcomb**, *University of Washington*, Advisor: Rastislav Bodik. *co-author*
Ph.D.	**Eunice Jun**, *University of Washington*, Advisor: Katharina Reinecke.
Ph.D.	**Sam Kaufman**, *University of Washington*, Advisor: Rastislav Bodik.
Undergraduate	**Maria Mueller**, *University of Washington*. *co-author*
Undergraduate	**Caitlin Schaefer**, *University of Washington*.
Undergraduate	**Tiona Francisco**, *University of Washington*.
Undergraduate	**Sameera Vemulapalli**, *University of California, Berkeley*.
Undergraduate	**Angela Sheu**, *University of California, Berkeley*.

Teaching

Fall 2015	**Discrete Mathematics and Probability Theory**, *UC Berkeley*.
Fall 2014	**Programming Languages and Compilers**, *UC Berkeley*.
Spring 2012	**Introduction to Computer Science**, *Swarthmore College*.
Fall 2011	**Introduction to Computer Science**, *Swarthmore College*.
Spring 2011	**Data Structures and Algorithms**, *Swarthmore College*.
Spring 2011	**Game Theory and Strategic Behavior**, *Swarthmore College*.
Fall 2010	**Computer Organization**, *Swarthmore College*.
Spring 2010	**Data Structures and Algorithms**, *Swarthmore College*.
Fall 2009	**Game Theory and Strategic Behavior**, *Swarthmore College*.
Fall 2009	**Introduction to Computer Science**, *Swarthmore College*.