

# Daniel W. Barowy

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## Education

Ph.D., University of Massachusetts Amherst, 2017 (Advisor: Prof. Emery Berger)

M.S. Computer Science, University of Massachusetts Amherst, 2013 (Advisors: Profs. Emery Berger and Mark Corner)

B.S. Computer Science, Boston University, Metropolitan College, 2010

B.A. Legal Studies and Philosophy, University of Massachusetts Amherst, 2002

## Employment

*Assistant Professor*, Williams College, 2017–present

*Research Assistant*, PLASMA Lab, University of Massachusetts Amherst, 2011–2017 (Mentor: Emery Berger)

*Research Intern*, Programming Languages and Software Engineering Group, IBM T.J. Watson (Yorktown Heights, NY), Summer 2015 (Mentor: Rodric Rabbah)

*Research Intern*, Decision Lab, Microsoft Research (New York City), Summer 2014 (Mentors: Dan Goldstein and Sid Suri)

*Research Intern*, Architecture Group, Microsoft Research (Silicon Valley), Summer 2013 (Mentors: John Davis and Eric Chung)

*Research Intern*, RiSE Group, Microsoft Research (Redmond), Summer 2012 (Mentors: Ben Zorn and Sumit Gulwani)

*Research Assistant*, PRISMS Lab, University of Massachusetts Amherst, 2010–2011 (Mentor: Mark Corner)

*Network Engineer, etc.*, Bedford/St. Martin's (now Macmillan Learning), 2004–2010 (Supervisor: Eugene Chang)

## Teaching

Williams College, CSCI 334: “Principles of Programming Languages”, Spring 2020 (instructor)

Williams College, CSCI 136: “Data Structures and Advanced Programming”, Spring 2020 (instructor)

Williams College, CSCI 331: “Introduction to Computer Security”, Fall 2019 (instructor)

Williams College, CSCI 136: “Data Structures and Advanced Programming”, Spring 2019 (instructor)

Williams College, WSP CSCI 11: “Hour of Code”, Winter 2019 (instructor)

Williams College, CSCI 334: “Principles of Programming Languages”, Fall 2018 (instructor)

Williams College, CSCI 334: “Principles of Programming Languages”, Spring 2018 (instructor; two sections)

Williams College, CSCI 331: “Introduction to Computer Security”, Fall 2017 (instructor)

Mount Holyoke College, COMSC 201: “Advanced Object-Oriented Programming”, Spring 2017 (instructor)

UMass Amherst, CMPSCI 220: “Programming Methodology”, Spring 2016 (teaching assistant, with Arjun Guha)

UMass Amherst, CMPSCI 220: “Programming Methodology”, Spring 2014 (teaching assistant, with John Altidor and Jack Wileden)

UMass Amherst, Legal Studies 497P: “Law and Media”, Legal Studies Department, University of Massachusetts Amherst, Fall 2001 & Fall 2002 (teaching assistant, with Alan Gaitenby)

UMass Amherst, Legal Studies H03: “Law and Media Colloquium”, Legal Studies Department, University of Massachusetts Amherst, Fall 2001 & Fall 2002 (teaching assistant, with Alan Gaitenby)

## Mentoring

Williams College, CSCI 494-04: “ExperiMan: Automatically Correct and Replicable Online Experiments”, thesis student Emmie Hine, AY 2019-2020

Williams College, CSCI 398-03: “Parser Combinators for Minimum Edit Distance Correcting Parsing”, student Lily Shao, Spring 2020

Williams College, “MOSS: Plagiarism Detection in F#”; student Vy Nguyen (mentor), Winter Study research project 2020

Williams College, “Differential Privacy: A Short Study”; student Jack Consenstein (mentor), Winter Study research project 2020

Williams College, “Determining Code Similarity for a Better Plagiarism Detection Tool: A Pursiot in Understanding Code Structure and Code Representations”; student Emma Corbertt (mentor), Winter Study research project 2020

Williams College, CSCI 397-03: “Earley and Minimum Edit Distance Error Correcting Parsing”, student Lily Shao, Fall 2019

Williams College, “Intelligible Syntax Errors for Novice Programmers”; students Vy Nguyen and Peter Zhao (mentor; with Jeannie Albrecht), Summer 2019

Williams College, “MadMan: Crowd-Programming Through Online Advertising”; students Karmen Liang and Max Stein (mentor), Summer 2019

Williams College, CSCI 498-02 (indep. study): “Autograder Technology”, students Jian Lu and Yuxin Wu, Spring 2019

Williams College, CSCI 397-03 (indep. study): “Security: Plagiarism Detection”; students Will Fung, Alex Han, David (Kyung Taek) Lee, and Michael Wong, Fall 2018

Williams College, CSCI 397-06 (indep. study): “Actionable Programming Language Error Messages”; student Lily Shao, Fall 2018

Williams College, CSCI 498-02 (indep. study): “Does ProDirect Manipulation Help in Early CS Education?”; student Quan Do, AY 2018-2019

Williams College, “Swell Williams Entry-Level Language” (SWELL); students Emmie Hine, Alex Taylor, and Kiersten Campbell (mentor), Summer 2018

Williams College, CSCI 398 (indep. study): “flarec: A Compilation Approach to Extracting Relational Data from Spreadsheets”; student Cole Erickson, Spring 2018

Google Summer of Code 2015, PLASMA @ UMass, “AutoMan Monitoring and Debugging Plugin for IntelliJ IDEA”; student Bartosz Janota (mentor)

UMass Amherst, (indep. study) “FrameWrangler”; student Kevin Gurney, Fall 2014 (mentor)

UMass Amherst, Undergraduate Honors Independent Study, “AutoMan Visual Debugger”; student Bianca Tamaskar, Fall 2014 (mentor)

Google Summer of Code 2013, PLASMA @ UMass, “CheckCell for Google Spreadsheet”; student Alexandru Toader (mentor)

## Publications

### Conference Proceedings

“INFRASTRUCTOR: Flexible, No-Infrastructure Scaling Tools for CS,” with William Jannen, SIGCSE '20 Technical Symposium, Portland, OR. March 11–14, 2020 (research paper)

“Evaluating ProDirect Manipulation in Hour of Code,” with Quan Do, Kiersten Campbell, Emmie Hine, Dzung Pham, Alex Taylor, and Iris Howley, SPLASH-E Symposium 2019, Athens, Greece October 20–25, 2019 (research paper)

“EXCELINT: Automatically Finding Spreadsheet Formula Errors,” with Emery D. Berger and Ben Zorn, OOPSLA 2018, Boston, MA November 4–9, 2018 (research paper)

“VOXPL: Programming with the Wisdom of the Crowd,” with Emery D. Berger, Daniel G. Goldstein, and Siddharth Suri, CHI 2017, Denver, CO May 6–11, 2017 (research paper)

“FLASHRELATE: Extracting Relational Data from Semi-Structured Spreadsheets Using Examples,” with Sumit Gulwani, Ted Hart, and Ben Zorn, PLDI 2015, Portland, OR June 13–17, 2015 (research paper)

“CHECKCELL: Data Debugging for Spreadsheets,” with Dimitar Gochev and Emery Berger, OOPSLA 2014, Portland, OR October 20–24, 2014 (research paper)

“AUTOMAN: A Platform for Integrating Human-Based and Digital Computation,” with Charlie Curtsinger, Emery Berger, and Andrew McGregor, OOPSLA 2012, Tucson, AZ October 19–26, 2012 (research paper)

### Journal Articles

AUTOMAN: A Platform for Integrating Human-Based and Digital Computation, with Charlie Curtsinger, Emery Berger, and Andrew McGregor, Communications of the ACM, Research Highlights, July 2016 (research paper)

## Workshops, Posters, Invited Talks, etc.

Post-PhD panel discussion, Programming Languages Mentoring Workshop, SPLASH 2019, Athens Greece

Defense Against the Dark Spreadsheet Arts, Microsoft Faculty Summit 2019 (invited talk)

EXCELINT: Automatically Finding Spreadsheet Formula Errors, Microsoft TechFest 2019 (workshop)

EXCELINT: Automatically Finding Formula Errors in Spreadsheets, IBM PL Day 2017 (workshop)

VoxPL: Programming with the Wisdom of the Crowd, IBM PL Day 2017 (workshop)

WoCMAN: Programming with the Wisdom of the Crowd, NEPLS Fall 2016 (workshop)

WoCMAN: Harnessing the Wisdom of the Crowd for High-Quality Estimates, ASPLOS WAX 2016 (workshop)

WoCMAN: Harnessing the Wisdom of the Crowd for High-Quality Estimates, POPL 2016 Student Research Competition (poster)

CHECKCELL: Data Debugging for Spreadsheets, OOPSLA 2014 (poster)

Data Debugging, with Dimitar Gochev and Emery Berger, POPL 2014 Off the Beaten Track (workshop)

AUTOMAN: Integrating Human and Silicon Computation, with Emery Berger and Andrew McGregor, NIPS 2011 Second Workshop on Computational Social Science and the Wisdom of Crowds, Sierra Nevada, Spain, December 17–18, 2011. (poster)

## Patents and Patent Applications

AUTOMATIC ERROR FIXES FOR HIGH-AVAILABILITY APPLICATIONS, with Emery D. Berger, Charlie Curtsinger, and Rodric Rabbah; filed Nov 8, 2017, Granted June 23, 2020. (patent number: 10,691,526)

EXTRACTING RELATIONAL DATA FROM SEMI-STRUCTURED SPREADSHEETS, with Sumit Gulwani, Ben Zorn, and Ted Hart; filed Oct 2, 2013, published April 2, 2015. (application number: 14/044063)

## Periodicals

Invited article: AUTOMAN: “Programming with People”, appears in “Follow the Crowd”, published Feb. 26, 2013 (<http://crowdresearch.org/blog/?p=5155>).

## Verified Software Artifacts

EXCELINT: Automatically Finding Formula Errors, OOPSLA 2018 Artifact Evaluation Committee, successfully evaluated functional, reusable, available.

FLASHRELATE: Extracting Relational Data from Semi-Structured Spreadsheets Using Examples, PLDI 2015 Artifact Evaluation Committee, passing grade (**Distinguished Artifact**)

CHECKCELL: Data Debugging for Spreadsheets, OOPSLA 2014 Artifact Evaluation Committee, passing grade

## Theses

Barowy, Daniel W., “Spreadsheet Tools for Data Analysts” (2017). *Doctoral Dissertations*. 1045.  
[http://scholarworks.umass.edu/dissertations\\_2/1045](http://scholarworks.umass.edu/dissertations_2/1045)

Barowy, Daniel W., “AutoMan: Integrating Human and Silicon Computation” (2013). *Master’s Thesis*.

## Professional Service

### Reviewing

*Program Committee Member*, 2020 Workshop on Human-in-the-loop Methods and Future of Work in BigData, Oct 2020

*External Review Committee Member*, OOPSLA 2020 (2020 ACM SIGPLAN International Conference on Object-Oriented Programming, Systems, Languages, and Applications), Jun 2020

*Program Committee Member*, PLDI 2020 (41st ACM SIGPLAN Conference on Programming Language Design and Implementation), Dec 2019

*Program Committee Member*, 2019 Workshop on Human-in-the-loop Methods and Human-Machine Collaboration in BigData, Oct 2019

*Program Committee Member*, IW3C2 The Web Conference 2019, Dec 2018

*Reviewer*, Journal of Systems and Software, Oct 2018

*Reviewer*, Communications of the ACM, Jul 2016

*External Reviewer*, PLDI 2016 (37th ACM SIGPLAN Conference on Programming Language Design and Implementation)

*External Reviewer*, ESOP 2016 (25th European Symposium on Programming)

*Reviewer*, PLDI 2015 Artifact Evaluation Committee (36th ACM SIGPLAN Conference on Programming Language Design and Implementation)

*Reviewer*, PLDI 2014 Artifact Evaluation Committee (35th ACM SIGPLAN Conference on Programming Language Design and Implementation)

*Co-Reviewer*, ICSE 2014 (36th International Conference on Software Engineering)

*External Reviewer*, TOPLAS 2014 (ACM Transactions on Programming Languages and Systems)

*External Reviewer*, SIGMOD 2013 (ACM Special Interest Group on Management of Data)

### College/Department Service

Williams College, *Honor and Discipline Committee*, academic year 2019-20.

Williams College, *CS Dept. Colloquium Committee*, academic year 2018-2019 and 2019-2020.

Williams College, *CS Dept. Website*, academic year 2019-2020.

Williams College, *Committee on Academic Standing (CAS)*, academic year 2018-19.

Williams College, *CS TA Selection Committee*, academic year 2017-18 and 2018-2019.

UMass Amherst, *Co-organizer*, weekly Data Science Tea, academic year 2015

UMass Amherst, *Doctoral Graduate Representative to the Faculty* (“GradRep”), academic year 2014

UMass Amherst, *Department Tea Organizer* (“Tea-Totaller”), academic year 2010

## Volunteering

*Student Volunteer Co-Chair*, PLDI 2016 (37th ACM SIGPLAN Conference on Programming Language Design and Implementation)

*Student Volunteer*, SPLASH 2015 (ACM SIGPLAN conference on Systems, Programming, Languages and Applications: Software for Humanity)

*Student Volunteer Co-Chair*, PLDI 2015 (36th ACM SIGPLAN Conference on Programming Language Design and Implementation)

*Volunteer*, Western Massachusetts Labor Action, Pittsfield, MA (1998-2000)

## Awards

National Science Foundation Award #2008487 for “Collaborative Research: CNS Core: Small: RUI: Intelligent Developer Infrastructure,” \$209,887.00, awarded July 2020.

Williams Divisional Research Funding Committee (DRFC) Award, for four RAs, Summer 2019

Williams Divisional Research Funding Committee (DRFC) Award, for two RAs, Spring 2019

Williams Divisional Research Funding Committee (DRFC) Award, for one RA, Winter 2019

UMass CICS 2017 Outstanding Dissertation Award, awarded Oct 2017

UMass CICS Student Travel Grant, for travel to CHI 2017, awarded Jan 2017

SIGPLAN PAC Student Travel Grant, for travel to PLDI 2016, awarded May 2016

NSF Student Travel Grant, for travel to SPLASH 2015, awarded September 2015

PLDI 2015 Distinguished Artifact, for work on FLASHRELATE, awarded June 2015

NSF Student Travel Grant, for travel to PLDI 2015, awarded summer 2015

SIGPLAN PAC Student Travel Grant, for travel to SPLASH 2014, awarded August 2014

Microsoft Research Graduate Fellowship, Finalist, 2012

SIGPLAN PAC Student Travel Grant, for travel to SPLASH 2012, awarded September 2012

Shep Shepard Legal Studies Award, Legal Studies Department, University of Massachusetts, Amherst, for academic excellence achieved within Legal Studies and contributions to the community, awarded May, 2001

Phi Beta Kappa Honor Society, inducted May, 2001