Rebecca Schreib (née Smith)

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Education

Rice University

Ph.D. in Computer Science — Aug. 2015 - Dec. 2019
- Advisor: Professor Scott Rixner
- Thesis: "Computer Science Education at Scale: Providing Personalized and Interactive Learning Experiences Within Large Introductory Courses"
- Certificate in Teaching and Learning

M.S. in Computer Science — Aug. 2014 - May 2015
- Advisor: Professor Scott Rixner
- Thesis: "Reliability and Optimization in Memory-Constrained Embedded Systems"

B.S. in Computer Science — Aug. 2010 - May 2014
- *Summa Cum Laude*
- *Distinction in Research and Creative Works*

Full-Time Employment

Rice University

Associate Teaching Professor of Computer Science — Jul. 2025 - Present

Assistant Teaching Professor of Computer Science — Jan. 2020 - Jun. 2025

Peer-Reviewed Conference Publications

M. Pham, J. Stallings, P. Mayor, and **R. Schreib**, "An Interactive Visualization Tool for Teaching Garbage Collection". In *Proceedings of the 30th ACM SIGCSE Conference on Innovation and Technology in Computer Science Education* (ITiCSE) (June 2025).

M. Pham, A. Nguyen, and **R. Schreib**, "MemStep: An Interactive Tool for Constructing and Visualizing the Run-Time Memory Layout of Java Programs". In *Proceedings of the 29th ACM SIGCSE Conference on Innovation and Technology in Computer Science Education* (ITiCSE) (July 2024).

R. Smith and S. Rixner, "Compigorithm: An Interactive Tool for Guided Practice of Complexity Analysis". In *Proceedings of the 25th ACM SIGCSE Conference on Innovation and Technology in Computer Science Education* (ITiCSE) (June 2020).

R. Smith and S. Rixner, "Design and Evaluation of a Collaborative Online Computational Thinking Course". In *Proceedings of the 25th ACM SIGCSE Conference on Innovation and Technology in Computer Science Education* (ITiCSE) (June 2020).

R. Smith, T. Tang, J. Warren, and S. Rixner, "Auto-Generating Visual Exercises for Learning Program Semantics". In *Proceedings of the 24th ACM SIGCSE Conference on Innovation and Technology in Computer Science Education* (ITiCSE) (July 2019).

R. Smith and S. Rixner, "The Error Landscape: Characterizing the Mistakes of Novice Programmers". In *Proceedings of the 50th ACM SIGCSE Technical Symposium on Computer Science Education* (SIGCSE) (February 2019).

R. Smith and S. Rixner, "A Policy-Based Framework for Dynamic Scaling of Virtual Machine Memory Reservations" In *Proceedings of the 8th ACM SIGMOD/SIGOPS Symposium on Cloud Computing* (SoCC) (September 2017).

R. Smith, T. Tang, J. Warren, and S. Rixner, "An Automated System for Interactively Learning Software Testing". In *Proceedings of the 22nd ACM SIGCSE Conference on Innovation and Technology in Computer Science Education* (ITiCSE) (July 2017).

T. Tang, **R. Smith**, S. Rixner, and J. Warren, "Data-Driven Test Case Generation for Automated Program Assessment". In *Proceedings of the 21st ACM SIGCSE Conference on Innovation and Technology in Computer Science Education* (ITiCSE) (July 2016).

R. Smith and S. Rixner, "Leveraging Managed Runtime Systems to Build, Analyze, and Optimize Memory Graphs". In *Proceedings of the 12th ACM SIGPLAN/SIGOPS Conference on Virtual Execution Environments* (VEE) (April 2016).

R. Smith and S. Rixner, "Surviving Peripheral Failures in Embedded Systems". In *Proceedings of the 2015 USENIX Annual Technical Conference* (ATC) (July 2015).

T.W. Barr, **R. Smith**, and S. Rixner, "Design and Implementation of an Embedded Python Run-Time System". In *Proceedings of the 2012 USENIX Annual Technical Conference* (ATC) (June 2012).

Invited Talks

Peer Evaluation of Teaching Tool (PETT) Workshop — Nov. 2024
Rice Center for Teaching Excellence (CTE)

MemStep: Visualizing the Memory Layout of Java Programs — Mar. 2024
Rice CTE Pedagogical Sciences in Practice Showcase

Data-Driven Tools for CS Education — Mar. 2018
Duke University CS-ECE Seminar Series

Poster Presentations

R. Smith and S. Rixner, "A Policy-Based Framework for Dynamic Scaling of Virtual Machine Memory Reservations". *Rice University Oil and Gas High Performance Computing Conference* (OGHPC) (March 2017).

R. Smith and S. Rixner, "Surviving Peripheral Failures in Embedded Systems". *Rice University Undergraduate Research Symposium* (April 2014).

R. Smith and S. Rixner, "A Memory Analyzer for an Embedded Python Run-Time System". *Rice University Centennial Poster Session of the Century* (October 2012).

Teaching Experience

Instructor of Record
Rice University Department of Computer Science
Note that Rice University uses a 5-point scale for instructor effectiveness ratings, where the best score is 1 ("Outstanding").

Introduction to Program Design (COMP 215)
Required sophomore-level course for Bachelor of Computer Science
Fa20: 3 sections, 195 students, 1.29 overall instructor effectiveness
Fa21: 3 sections, 189 students, 1.23 overall instructor effectiveness
Fa22: 4 sections, 251 students, 1.20 overall instructor effectiveness
Sp23: 1 section, 40 students, 1.28 overall instructor effectiveness
Fa23: 2 sections, 128 students, 1.15 overall instructor effectiveness
Sp24: 1 section, 51 students, 1.22 overall instructor effectiveness
Fa24: 2 sections, 99 students, 1.22 overall instructor effectiveness

Introduction to Programming Languages (COMP 312)
Required sophomore-level course for Bachelor of Computer Science
Sp25: 1 section, 105 students, 1.21 overall instructor effectiveness

Computational Thinking (COMP 140)
Required freshman-level course for Bachelor of Computer Science
Fa15: 1 section, 68 students, 1.19 overall instructor effectiveness
Sp19: 1 section, 65 students, 1.47 overall instructor effectiveness
Sp20: 1 section, 63 students, 1.18 overall instructor effectiveness
Sp21: 2 sections, 94 students, 1.34 overall instructor effectiveness
Sp22: 2 sections, 112 students, 1.20 overall instructor effectiveness
Su25: 1 section, 7 students, in progress

Programming for Data Science (COMP 614)
Required first semester course for Master of Data Science
Fa21: 1 section, 41 students, 1.66 overall instructor effectiveness

Pedagogy for Computer Science (COMP 691)
Training course for new CS PhD Student & Postdoc Teaching Program
Su23: 1 section, 3 students, no course evaluations completed
Sp24: 1 section, 6 students, 1.00 overall instructor effectiveness

Rice University Center for Teaching Excellence
Practicum in College Teaching (UNIV 502)
Required course for Graduate Certificate in Teaching and Learning
Sp23: 1 section, 6 students, 1.00 overall instructor effectiveness

Presentation Coach
Rice University Department of Computer Science
Graduate Seminar in Computer Science (COMP 600) Fa17, Sp18, Fa18, Sp19, Fa19

Head Teaching Assistant
Rice University Department of Computer Science
Computational Thinking (COMP 140) Fa13, Fa14

Teaching Assistant
Rice University Department of Computer Science
System-Level Virtualization (COMP 528) Sp17
Compiler Construction (COMP 412) Fa16
Introduction to Computer Systems (COMP 321) Sp15
Computational Thinking (COMP 140) Fa11, Fa12

Educational Tool Development

MemStep (tools.owltest.org/memstep): Created a tool that enabled students to interactively step through an arbitrary Java program and produce the state of the stack and the heap corresponding to that program. Deployed in COMP 215 at Rice.

MemStep-GC (tools.owltest.org/memstep-gc): Created an extension of MemStep that includes support for three garbage collection algorithms: reference counting, mark-sweep, and mark-compact. Deployed in COMP 215 at Rice.

EvOwl: Created a tool that leverages peer and self code review to help students to learn best program design practices and facilitate grading of program design in large classes. Deployed in COMP 318 at Rice.

Peer Evaluation of Teaching Tool (PETT) (cte.rice.edu/resources/peer-eval): Created a tool that makes it easy for instructors to create custom forms for evaluating their teaching. Deployed in the Center for Teaching Excellence at Rice.

Compigorithm: Created a tool that guides students as they practice a five-step process for performing Big-O algorithmic complexity analysis. Deployed in COMP 182 at Rice.

VizQuiz: Created a tool that produces visual exercises with immediate, automated feedback for teaching Python semantics. Deployed in COMP 140 at Rice.

Testception (github.com/rice-cs-edutools/testception): Created a tool that generates interactive exercises for teaching novice students how to develop comprehensive test suites using a combination of black-box and white-box testing. Deployed in COMP 140 at Rice.

FEAT: Created framework that constructs an expansive test suite for a function, given an inductive specification of the function's parameters. Deployed in COMP 140 at Rice.

Stratocode: Worked on a team to develop a cloud-based IDE that targets introductory to intermediate computer science courses. Designed a lightweight version control system and storage server that interfaces with Google Cloud Storage. Deployed in COMP 215 at Rice.

Dr. Java (github.com/DrJavaAtRice/drjava): Worked on a team to update and improve a lightweight Java IDE that targets introductory to intermediate computer science courses. Integrated code coverage with JUnit testing and re-architected sub-system for managing regions in open documents.

Service & Leadership

Service to the Department of Computer Science

Director of Undergradute Studies, Rice CS	Su23 - Present
Major Advisor, Undergraduate Program	Fa20 - Present
Member, Discrete Math Curriculum Committee	Sp25 - Present
Co-Chair, Student Awards Committee	Sp25
Transfer Credit Advisor, Undergraduate Program	Sp22 - Sp25
Member, AI Undergraduate Curriculum Working Group	Fa24
Member, Lecturer Search Committee	Fa23 - Sp24
Member, Undergraduate Curriculum Working Group	Fa22 - Sp23
Member, Lecturer Search Committee	Fa22 - Sp23
Chair, PhD Student Teaching Working Group	Fa21 - Sp22
Member, Assistant Teaching Professor Search Committee	Sp22
Member, Admissions Committee for MDS Program	Sp22
Member, Admissions Committee for MDS Program	Sp21
Student Member, Lecturer Search Committee	Sp19
Student Member, Lecturer Search Committee	Sp17
President, Rice CS Grad Student Association (CS GSA)	Sp18 - Fa18
Mentorship & Recruitment Director, Rice CS GSA	Sp17 - Fa17

Service to the School of Engineering & Computing

Teaching Mentor, School of Engineering & Computing	Fa25 - Present
Member, School Course Review Committee (SCRC)	Fa23 - Present

Service to the University

Member, University Committee on Teaching	Fa25 - Present
Divisional Advisor, Wiess College	Fa22 - Present
Faculty Advisor, RemixCS	Sp24 - Present
Faculty Advisor, RiceApps	Fa22 - Present
Faculty Associate, Wiess College	Sp22 - Present

Panelist, Rice O-Week PAA Engineering Panel — Aug. 2025
Presenter, Owl Days Faculty Classroom Sampler — Apr. 2024
Member, Rice OURI Vertically Integrated Project Working Group — Sp24
Presenter, Owl Days Faculty Classroom Sampler — Apr. 2023
Judge, HackRice Annual Hackathon — Sep. 2022
Presenter, Owl Days Faculty Classroom Sampler — Apr. 2022
Graduate Fellow, Rice Center for Teaching Excellence (CTE) — Fa18 - Sp19
Graduate Fellow, Rice Center for Teaching Excellence (CTE) — Fa17 - Sp18
CS Representative, Rice CTE Graduate Advisory Board — Sp17 - Fa19
Member, Rice CTE Search Committee for Assistant Director — Sp18
Ambassador, Rice Graduate and Postdoctoral Studies — Sp17

Service to the Profession

Reviewer, ACM SIGCSE Technical Symposium on CS Education 2026 — Aug. 2025
Reviewer, ACM SIGCSE Technical Symposium on CS Education 2025 — Aug. 2024

Honors & Awards

Faculty Honors & Awards

Finalist, George R. Brown Award for Superior Teaching — Apr. 2025
Favorite Professor, 37th Annual Rice Scholar Athlete Celebration — Feb. 2025
Career Champion Award, Rice CCD — Aug. 2024
Winner, Nicolas Salgo Outstanding Teaching Award — Apr. 2024
Winner, Sophia Meyer Farb (Phi Beta Kappa) Prize for Teaching — Apr. 2024
Career Champion Award, Rice CCD — Aug. 2023
Finalist, Sophia Meyer Farb (Phi Beta Kappa) Prize for Teaching — Mar. 2023
Favorite Professor, 37th Annual Rice Scholar Athlete Celebration — Feb. 2023
Career Champion Award, Rice CCD — Aug. 2022
Favorite Professor, Wiess College — Feb. 2020
Favorite Professor, Will Rice College — Feb. 2020

Graduate Research Fellowships

NSF GRFP, National Science Foundation — Fa15 - Sp18
Presidential Fellowship, Rice University — Fa15 - Sp19
Computational Science Fellowship, Ken Kennedy Institute — Fa15 - Sp19
MS Research Fellowship, Rice CS Department — Fa14 - Sp15

Mentorship & Outreach

Research Mentorship

Mentor, Rice Summer Undergradute Research Fellowship Program (SURF)
- Su23: 2 students
- Su24: 2 students
- Su25: 3 students

Mentor, Undergraduate Research (outside of the SURF program)
- Su23: 2 students
- Fa23: 2 students
- Sp24: 2 students
- Su24: 2 students
- Fa24: 9 students
- Sp25: 11 students
- Su25: 4 students

General Mentorship

Invited Mentor, Rice Women in STEM Professor Dinner — Oct. 2024
Invited Mentor, Rice Women in STEM Professor Dinner — Oct. 2023
Invited Mentor, NCWIT Regional Awards Ceremony Roundtable — Apr. 2023

Big Sister, Rice CSters (Women in CS) Fa18 - Sp19
Mentor, Rice CS Grad Student Association Fa17 - Sp18
Graduate Mentor, Rice GSA Undergrad Mentorship Program Fa16 - Sp17
Mentor, Rice CS Grad Student Association Fa16 - Sp17
Graduate Mentor, Rice GSA Undergrad Mentorship Program Fa15 - Sp16
Mentor, Rice CS Grad Student Association Fa15 - Sp16
Big Sister, Rice CSters (Women in CS) Fa15 - Sp16

Panels

Invited Panelist, Rice OURI Research Panel Oct. 2024
Invited Panelist, Rice CSters (Women in CS) Graduate School Panel Mar. 2024
Invited Panelist, Rice UNIV 201 Research Readiness Panel Feb. 2024
Invited Panelist, Rice Women's Resource Center Women in STEM Panel Nov. 2023
Invited Panelist, Rice UNIV 201 Research Readiness Panel Oct. 2023
Invited Panelist, Rice SURF STEM Career Panel Jun. 2023
Invited Panelist, NCWIT Regional Awards Ceremony Panel Apr. 2023
Invited Panelist, Rice Women in STEM Professors Panel Nov. 2022
Invited Panelist, Rice CSters (Women in CS) Graduate School Panel Apr. 2018

Outreach Talks

Invited Speaker, Data Divas Bootcamp Jun. 2025
Invited Speaker, Bellaire High School Girls Who Code Club Dec. 2023
Invited Speaker, STEM & Rose Fireside Chat Series Oct. 2023
Invited Speaker, Robotech: NCWIT AspireIT K-12 Outreach Program Jun. 2017
Invited Speaker, Clements High School Girls in Computing Hack Day Dec. 2016