

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 and **R. Schreib**. “Quantifying Student Mistakes and Misconceptions of the Run-Time Memory Layout of Java Programs”. In *Proceedings of the 31st ACM SIGCSE Conference on Innovation and Technology in Computer Science Education (ITiCSE)* (July 2026).

A. Tillou, P. Mayor, S. Rixner, and **R. Schreib**. “Learning to Assess Software Quality: A Metric-Guided Peer Code Review Tool for Large-Scale Software”. In *Proceedings of the 31st ACM SIGCSE Conference on Innovation and Technology in Computer Science Education (ITiCSE)* (July 2026).

M. Pham, J. Stallings, P. Mayor, and **R. Schreib**. “An Interactive Visualization Tool for Teaching Garbage Collection”. In *Proceedings of the 30th ACM 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 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 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 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 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 TS) (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 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 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 & PANELS	Career Landscape Workshop Series (Panel) Computing Research Association Education Committee (CRA-E)	Apr. 2026
	Effective Pedagogical Strategies for Large Classrooms (Panel) Rice Center for Teaching Excellence (CTE)	Apr. 2026
	Peer Evaluation of Teaching Tool (PETT) Workshop (Talk) Rice Center for Teaching Excellence	Nov. 2024
	Keynote Speech (Talk) Rice Phi Beta Kappa Induction Ceremony	May 2024
	MemStep: Visualizing the Memory Layout of Java Programs (Talk) Rice CTE Pedagogical Sciences in Practice Showcase	Mar. 2024
	Data-Driven Tools for CS Education (Talk) Duke University CS-ECE Seminar Series	Mar. 2018

POSTER PRESENTATIONS	R. Smith and S. Rixner, “A Policy-Based Framework for Dynamic Scaling of Virtual Machine Memory Reservations”. <i>Rice University Oil and Gas High Performance Computing Conference</i> (OGHPC) (March 2017).	
	R. Smith and S. Rixner, “Surviving Peripheral Failures in Embedded Systems”. <i>Rice University Undergraduate Research Symposium</i> (April 2014).	
	R. Smith and S. Rixner, “A Memory Analyzer for an Embedded Python Run-Time System”. <i>Rice University Centennial Poster Session of the Century</i> (October 2012).	

TEACHING
EXPERIENCE

Instructor of Record

Rice University Department of Computer Science

Rice University uses a 5-point scale for instructor effectiveness ratings, where the best score is 1 (“Outstanding”).

Computational Thinking (COMP 140)

Required freshman-level course for Bachelor of Computer Science (CS)

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, 1.00 overall instructor effectiveness

Su26: 1 section, 7 students, in progress

Introduction to Program Design (COMP 215)

Required sophomore-level course for Bachelor of CS

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

Fa25: 2 sections, 76 students, 1.27 overall instructor effectiveness

Introduction to Programming Languages (COMP 312)

Required sophomore-level course for Bachelor of CS

Sp25: 1 section, 105 students, 1.21 overall instructor effectiveness

Sp26: 1 section, 119 students, 1.10 overall instructor effectiveness

Pedagogical Tool Design (COMP 364/464)

Project-based course using VIP model (long-term project, cross-level collaboration);

400-level version can satisfy senior design requirement of Bachelor of CS

Sp26: 1 section, 13 students, 1.09 overall instructor effectiveness

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 enables 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 (github.com/rice-cs-edutools/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 through the process of 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	
	Member , Broadening Participation in Computing Committee	Fa25 - Present
	Director , Undergraduate Program	Su23 - Present
	Major Advisor , Undergraduate Program	Fa20 - Present
	Member , AI4CSEd Committee	Fa25 - Sp26
	Co-Chair , Student Awards Committee	Sp25 - Fa25
	Member , Discrete Math Curriculum Committee	Sp25 - Su25
	Transfer Credit Advisor , Undergraduate Program	Sp22 - Sp25
	Member , AI Undergraduate Curriculum Working Group	Fa24
	Member , Lecturer Search Committee	Fa23 - Sp24
	Member , CS 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
	Mentor , Teaching Professors Mentorship Network	Fa24 - Present
	Member , School Course Review Committee (SCRC)	Fa23 - Present
	Member , Digital Health Teaching Faculty Search Committee	Sp26
	SERVICE TO THE UNIVERSITY	
	Member , Honor Council Proctoring Test Working Group	Sp26 - Present
	Member , University Committee on Teaching (CoT)	Fa25 - Present
	Faculty Advisor , RemixCS	Sp24 - Present
	Divisional Advisor , Wiess College	Fa22 - Present
	Faculty Advisor , RiceApps	Fa22 - Present
	Faculty Associate , Wiess College	Sp22 - Present
	Chair , CoT Subcommittee on AI	Sp26
	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
	SERVICE TO THE PROFESSION	
	Reviewer , ACM Technical Symposium on Computer Science Education 2027	Jul. 2026
	Reviewer , ACM Virtual Global Computing Education Conference 2026	May 2026
	Reviewer , ACM Technical Symposium on Computer Science Education 2026	Aug. 2025
	Reviewer , ACM Technical Symposium on Computer Science Education 2025	Aug. 2024
HONORS & AWARDS	FACULTY TEACHING AWARDS	
	Winner , George R. Brown Prize for Excellence in Teaching	Apr. 2026
	Winner , Award for Curriculum Innovation in the School of Engineering	Apr. 2026

Finalist , George R. Brown Award for Superior Teaching	Apr. 2025
Winner , Nicolas Salgo Outstanding Teaching Award	Apr. 2024
Winner , Sophia Meyer Farb (Phi Beta Kappa) Prize for Teaching	Apr. 2024
Finalist , Sophia Meyer Farb (Phi Beta Kappa) Prize for Teaching	Mar. 2023

OTHER FACULTY & AWARDS

Career Champion Award , Rice CCD	Aug. 2025
Favorite Professor , 39th Annual Rice Scholar Athlete Celebration	Feb. 2025
Career Champion Award , Rice CCD	Aug. 2024
Career Champion Award , Rice CCD	Aug. 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

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

MENTORSHIP & OUTREACH

RESEARCH MENTORSHIP

Mentor, Rice Summer Undergraduate 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

Fa25: 14 students

Sp26: 13 students

Su26: 3 students

GENERAL MENTORSHIP

Invited Mentor , Rice Women in STEM Professor Dinner	Oct. 2025
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