

Rui (Gina) Bai

ASSISTANT PROFESSOR OF THE PRACTICE

Department of Computer Science · Vanderbilt University

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Education

North Carolina State University

Raleigh, NC

PH.D. IN COMPUTER SCIENCE

June 2022

- Advisor: Kathryn T. Stolee
- Dissertation: Improving Student Testing Practices through a Lightweight Checklist Intervention
- Committee: Kathryn Stolee (Chair), Sarah Heckman, Thomas Price, Shiyan Jiang, Susan Fisk (External)

Wake Forest University

Winston-Salem, NC

B.S. IN COMPUTER SCIENCE, MINOR IN MATHEMATICS

May 2016

- Magna Cum Laude

Employment History

Vanderbilt University

Nashville, TN

ASSISTANT PROFESSOR OF THE PRACTICE

Aug. 2022 - Present

North Carolina State University

Raleigh, NC

GRADUATE RESEARCH ASSISTANT (SUPERVISED BY DR. KATHRYN T. STOLEE)

Fall 2016 - Summer 2022

INSTRUCTOR

Summer 2020, 2021

GRADUATE TEACHING ASSISTANT

Fall 2017, 2020

Mei & Mark LLP

Washington, DC

WEB SUPPORT SPECIALIST (VOLUNTEER)

Dec. 2016 - May 2021

Wake Forest University

Winston-Salem, NC

UNDERGRADUATE TEACHING ASSISTANT

Spring 2015

SUMMER RESEARCH FELLOW (SUPERVISED BY DR. PAÚL PAUCA AND DR. ROBERT PLEMMONS)

Summer 2014

Teaching Experience

TEACHING

Vanderbilt University

Nashville, TN

INSTRUCTOR OF RECORD

Fall 2022 - Present

- **CS 1101: Programming and Problem Solving - Java**, 3 credit, undergraduate core course
 - **Course Coordinator:** Fall 2023 to present. Managed 25+ undergraduate teaching assistants per semester
 - Developed and adapted lecture materials and assessments; designed and introduced in-class coding practices and exam review sessions
 - Designed and introduced recitation sessions; supervised the graduate and undergraduate recitation leaders
 - Led the transition to using Autograders for assignment submissions and grading, and the class-wide adoption of IDEs
 - Semesters Taught/Teaching (# students): Spr 26 (TBA), Fall 25 (92), Spr 25 (101), Fall 24 (179), Spr 24 (154), Fall 23 (138), Spr 23 (162), Fall 22 (169)
- **CS 2201: Program Design and Data Structures - Java**, 3 credit, undergraduate core course
 - Assisted in course redesign (from C++ to Java); developed and adapted lecture materials and assessments
 - Semesters Taught/Teaching (# students): Spr 26 (TBA), 25 (16), Spr 25 (19), Fall 24 (13), Spr 24 (23), Fall 23 (26)

North Carolina State University

Raleigh, NC

INSTRUCTOR OF RECORD

Summer 2020, 2021

• **CSC 116: Introduction to Computing - Java**, 3 credit, undergraduate core course, Summer 2021, 35 students

- Flipped classroom; delivered lectures and supervised in-class labs synchronously online via Zoom

• **CSC 226: Discrete Mathematics for Computer Scientists**, 3 credit, undergraduate core course, Summer 2020, 21 students

- Delivered lectures synchronously online via Zoom

GRADUATE TEACHING ASSISTANT

Fall 2017, 2020

• **CSC 712/591: Software Testing**, 3 credit, graduate elective course (for Ph.D. and M.S. students), Fall 2020, 38 students

• **CSC 216: Programming Concepts - Java**, 4 credit, undergraduate core course, Fall 2017, 200+ students (25 in lab)

Wake Forest University

UNDERGRADUATE TEACHING ASSISTANT & STUDENT TUTOR

- Undergraduate TA: **CSC 101: Overview of Computer Science**, 3 credit, undergraduate course for non-CS majors/minors
- Tutor: Conducted one-on-one and group tutoring sessions on Computer Science, Mathematics, and Mandarin Chinese

Winston-Salem, NC

Fall 2013 – Spring 2016

PROFESSIONAL DEVELOPMENT

- AY 25-26 **Vanderbilt AdvancED (The Institute for the Advancement of Higher Education)**, CCC-TEACH seminars
Feb '25 **Computing Research Association**, CRA-E SIGCSE 2025 Pre-Symposium Event: Professional Development for Teaching-Track Faculty
Nov '23 **Computing Research Association**, 2023 CRA-WP Career Mentoring Workshop
May '23 **Vanderbilt AdvancED**, Course Design Institute on Inclusive Teaching

Research Grants

DevStats: Code Plagiarism Detector in the Age of Generative AI

AY 24-25 2024-2025 Provost's Faculty Grant for Immersion Vanderbilt
Amount: \$2,000

Improving Software Testing Education through Lightweight Explicit Testing Strategies and Feedback

01/01/2024-
06/30/2026 North Carolina State University Subcontract of **National Science Foundation Award #2141923**
Amount: \$50,438

Publications [Peer-Reviewed]

JOURNAL ARTICLES

Fair Enough: Searching for Sufficient Measures of Fairness

TOSEM 2023

SUVODEEP MAJUMDER, JOYMALLYA CHAKRABORTY, **GINA R. BAI**, KATHRYN T. STOLEE, TIM MENZIES.

- ACM Transactions on Software Engineering and Methodology

FULL CONFERENCE PAPERS

A Comparative Study on ChatGPT and Checklist as Support Tools for Unit Testing Education

FSE-SEET 2025

ZIHAN FANG, JILIAN LI, ANDA LIANG, **GINA R. BAI**, YU HUANG

- ACM International Conference on the Foundations of Software Engineering

Evaluating the Effectiveness of a Testing Checklist Intervention in CS2: An Quasi-experimental Replication Study

ICER 2024

GINA R. BAI, ZUOXUAN JIANG, THOMAS W. PRICE, KATHRYN T. STOLEE

- ACM Conference on International Computing Education Research

Does ChatGPT Help With Introductory Programming? An Experiment of Students Using ChatGPT in CS1

ICSE-SEET 2024

YUANKAI XUE, HANLIN CHEN, **GINA R. BAI**, ROBERT TAIRAS, YU HUANG

- IEEE/ACM International Conference on Software Engineering - Software Engineering Education and Training

An Experience Report on Introducing Explicit Strategies into Testing Checklists for Advanced Beginners

ITiCSE 2023

GINA R. BAI, SANDEEP STHAPIT, SARAH HECKMAN, THOMAS W. PRICE, KATHRYN T. STOLEE

- ACM conference on Innovation and Technology in Computer Science Education

Check It Off: Exploring the Impact of a Checklist Intervention on the Quality of Student-written Unit Tests

ITiCSE 2022

GINA R. BAI, KAI PRESLER-MARSHALL, THOMAS W. PRICE, KATHRYN T. STOLEE.

- ACM Conference on Innovation and Technology in Computer Science Education

How Students Unit Test: Perceptions, Practices, and Pitfalls

ITiCSE 2021

GINA R. BAI, JUSTIN SMITH, KATHRYN T. STOLEE.

- ACM Conference on Innovation and Technology in Computer Science Education

How Graduate Computing Students Search When Using an Unfamiliar Programming Language

ICPC 2020

GINA R. BAI, JOSHUA KAYANI, KATHRYN T. STOLEE.

- IEEE/ACM International Conference on Program Comprehension

Exploring Tools and Strategies Used During Regular Expression Composition Tasks

ICPC 2019

GINA R. BAI, BRIAN CLEE, NISCHAL SHRESTHA, CARL CHAPMAN, CIMONE WRIGHT, KATHRYN T. STOLEE.

- IEEE/ACM International Conference on Program Comprehension

Investigating the Effects of Gender Bias on GitHub

ICSE 2019

NASIF IMTIAZ, JUSTIN MIDDLETON, JOYMALLYA CHAKRABORTY, NEILL ROBSON, GINA R. BAI, EMERSON MURPHY-HILL.

- IEEE/ACM International Conference on Software Engineering

Exploring Regular Expression Evolution

SANER 2019

PEIPEI WANG, GINA R. BAI, KATHRYN T. STOLEE.

- IEEE International Conference on Software Analysis, Evolution and Reengineering

SHORT CONFERENCE PAPERS

Is Assertion Roulette still a test smell? An experiment from the perspective of testing education

VL/HCC 2022

GINA R. BAI, KAI PRESLER-MARSHALL, SUSAN R. FISK, KATHRYN T. STOLEE.

- IEEE Symposium on Visual Languages and Human-Centric Computing

Improving Students' Testing Practices

ICSE Doc Sym 2020

GINA R. BAI.

- IEEE/ACM International Conference on Software Engineering - Doctoral Symposium

Invited Talks

Speaker How novice testers perceive and perform unit testing? Never Work in Theory (NWiT), April 25-26, 2023

Student Supervision & Mentoring

Sp25-f25 **Ron Asoulin-Handelman**, Mentored undergraduate research project designing, developing, testing, and evaluating an AI-integrated JetBrains plugin to support testing education

Sp24-pres **Cameron Scarpati, Dylan Scarpati**, Mentored undergraduate research project designing, developing, testing, and evaluating a JetBrains plugin to capture developers' programming and testing practices within the IDE. Awarded the 24-25 Provost's Faculty Grant for Immersion Vanderbilt; Cameron was selected for Honorable Mention for the 2025-2026 CRA Outstanding Undergraduate Researcher Award.

Sp-Sum24 **Allison Jiang**, Mentored undergraduate research project evaluating the effectiveness of a lightweight testing checklist in a classroom setting. Manuscript published in ICER '24.

Fall 23 **Maxwell Chen**, Mentored undergraduate research project on AI drug design using reinforcement learning and graph neural networks. Selected to present at Vanderbilt Undergraduate Research Fair.

Professional Service

SERVICE TO THE PROFESSION

2026 **Reviewer**, ACM Conference on Innovation and Technology in Computer Science Education (ITiCSE '26)

2025 **Reviewer**, ACM Special Interest Group on Computer Science Education (SIGCSE '26)

2025 **Program Committee Member**, IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC '25)

2025 **Invited Reviewer**, ACM Symposium on User Interface Software and Technology (UIST '25)

2025 **Reviewer**, ACM Conference on Innovation and Technology in Computer Science Education (ITiCSE '25)

2024 **Reviewer**, ACM Special Interest Group on Computer Science Education (SIGCSE '25)

2024 **Reviewer**, ACM Conference on Innovation and Technology in Computer Science Education (ITiCSE '24)

2023 **Invited Manuscript Reviewer**, Springer Empirical Software Engineering

- 2023 **Program Committee Member**, Workshop on Advances in Human-Centric Experiments in Software Engineering (HUMAN '24). Co-located with SANER 2024.
- 2023 **Reviewer**, ACM Special Interest Group on Computer Science Education (SIGCSE '24)
- 2023 **Reviewer**, ACM Conference on Innovation and Technology in Computer Science Education (ITiCSE '23)
- 2022 **Reviewer**, ACM Special Interest Group on Computer Science Education (SIGCSE '23)
- 2022 **Invited Manuscript Reviewer**, IEEE Transactions on Learning Technologies

SERVICE TO THE UNIVERSITY & THE STUDENTS

- AY 25-28 **Faculty Advisor**, The Undergraduate Honor Council Vanderbilt
- AY 24-26 **Search Committee Chair**, Professor of the Practice Search Committee for the CCC and the CS Department Vanderbilt
- F24-pres **Member**, Faculty Advisory Council of The College of Connected Computing Vanderbilt
- Nov '24 **Keynote Speaker**, Vanderbilt chapter of Global China Connection - China Talk Vanderbilt
- F23-pres **Academic Advisor**, School of Engineering, 22 undergraduate and 7 graduate student advisees Vanderbilt
- F23-pres **Faculty Advisor**, Vanderbilt Chapter of Kappa Theta Pi - Vandy's first pre-professional technology fraternity Vanderbilt
- March '23 **Panelist**, Vanderbilt Honor Council Academic Integrity Week Panel Vanderbilt
- 2017-20 **Graduate Relations Chair/Member**, NCSU-ACM-W (Women in Computer Science) NC State

SERVICE TO THE COMMUNITY

- 2023 **Invited Judge**, Congressional App Challenge - Invited by the Office of Congressman Mark Green Nashville, TN
- 2023 **Member**, AP CSA National Advisory Board College Board

Honors & Awards

- 2025 **ACM SIGCSE Henry Walker Travel Grant Recipient**, Association for Computing Machinery SIGCSE
- 2025 **CRA-E SIGCSE 2025 Pre-Symposium Event Travel Grant Recipient**, Computing Research Association
- 2023 **CRA-WP Career Mentoring Workshop Travel Scholarship Recipient**, Computing Research Association
- 2021 **Graduate Merit Award Recipient**, College of Engineering, North Carolina State University
- 2018 **Grace Hopper Travel Scholarship Recipient**, NCSU-ACM-W (Women in Computer Science)
- 2016-17 **Graduate Research Award Recipient**, College of Engineering, North Carolina State University
- 2014 **Research Fellowship Recipient**, Wake Forest University

Miscellaneous

- Language** English (fluent), Mandarin Chinese (fluent)
- Honor Society** Upsilon Phi Epsilon (International Honor Societies for the Computing and Information Disciplines, invited 2015)