

# 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, Shiyang 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
  - Introduced and managed Autograder for assignment submissions and grading
  - Semesters Taught/Teaching: Fall 25 (TBA), Spring 25 (101 students), Fall 24 (179 students), Spring 24 (154 students), Fall 23 (138 students), Spring 23 (162 students), Fall 22 (169 students)
- **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: Fall 25 (TBA), Spring 25 (19 students), Fall 24 (13 students), Spring 24 (23 students), Fall 23 (26 students)

### 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

Winston-Salem, NC

Fall 2013 – Spring 2016

- 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

## PROFESSIONAL DEVELOPMENT

- 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 Center for Teaching**, Course Design Institute on Inclusive Teaching

## Research Grants

Y24 - Y25	<b>DevStats: Code Plagiarism Detector in the Age of Generative AI</b> 2024-2025 Provost's Faculty Grant for Immersion Vanderbilt Amount: \$2,000
01/01/2024-06/30/2026	<b>Improving Software Testing Education through Lightweight Explicit Testing Strategies and Feedback</b> North Carolina State University Subcontract of <b>National Science Foundation Award #2141923</b> 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, JILIANG 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 SHAPIT, 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-pres **Ron Asoulin-Handelman**, Mentored undergraduate research project designing, developing, testing, and evaluating an AI-integrated autograder to support computing 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
- 2024 **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. Presented at Vanderbilt Undergraduate Research Fair.

## Professional Service

### SERVICE TO THE PROFESSION

- 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

F25-pres	<b>Faculty Advisor</b> , Board of Faculty Advisers for the Undergraduate Honor Council	<i>Vanderbilt</i>
F24-pres	<b>Faculty Advisory Council Member</b> , The College of Connected Computing	<i>Vanderbilt</i>
F24-pres	<b>Committee Chair</b> , Professor of the Practice Search Committee for the College of Connected Computing	<i>Vanderbilt</i>
Nov '24	<b>Keynote Speaker</b> , Vanderbilt chapter of Global China Connection - China Talk	<i>Vanderbilt</i>
F23-pres	<b>Academic Advisor</b> , School of Engineering, 27 student advisees	<i>Vanderbilt</i>
F23-pres	<b>Faculty Advisor</b> , Vanderbilt Chapter of Kappa Theta Pi - Vandy's first pre-professional technology fraternity	<i>Vanderbilt</i>
March '23	<b>Panelist</b> , Vanderbilt Honor Council Academic Integrity Week Panel	<i>Vanderbilt</i>
2017-20	<b>Graduate Relations Chair/Member</b> , NCSU-ACM-W (Women in Computer Science)	<i>NC State</i>

## SERVICE TO THE COMMUNITY

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

## Honors & Awards

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

## Miscellaneous

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<b>Language</b>	English (fluent), Mandarin Chinese (fluent)
<b>Honor Society</b>	Upsilon Phi Epsilon (International Honor Societies for the Computing and Information Disciplines, invited 2015)