MIRANDA C. PARKER, PH.D.

Assistant Professor
Department of Computer Science
San Diego State University
mcparker@sdsu.edu
mirandacparker.com

EDUCATION

Ph.D., Human-Centered Computing
August 2014 - December 2019
Georgia Institute of Technology
Dissertation: *An Analysis of Supports and Barriers to Offering Computer Science in Georgia Public High Schools*
Committee Members: Betsy DiSalvo, Rebecca E. Grinter, Willie Pearson, Jr., Leigh Ann DeLyser

Bachelor of Science, Computer Science
August 2010 - May 2014
Harvey Mudd College
Graduated with Honors in Computer Science

PROFESSIONAL EXPERIENCE

Fall 2022 - Present	**San Diego State University** San Diego, CA
	Assistant Professor, Department of Computer Science
Spring 2020 - Spring 2022	**University of California, Irvine** Irvine, CA
	Postdoctoral Scholar, School of Education
	Advised by Mark Warschauer
Spring 2020	**Georgia Institute of Technology**, Atlanta, GA
	Postdoctoral Fellow, Constellations Center and DataWorks
	Advised by Lien Diaz and Betsy DiSalvo
Fall 2014 - Fall 2019	**Georgia Institute of Technology**, Atlanta, GA
	Graduate Research Assistant, School of Interactive Computing
	Advised by Mark Guzdial
Summer 2016	**Code.org**
	Research Intern, K-12 Computer Science Framework
	Advised by Pat Yongpradit

RESEARCH PUBLICATIONS AND PRESENTATIONS

Journal Articles

[J6] Leiny Garcia, **Miranda Parker**, Mark Warschauer. Coding attitudes of fourth-grade latinx students during distance learning. In Computer Science Education, 2023.

[J5] Lauren Margulieux, **Miranda C. Parker**, Gozde Cetin Uzun, Jonathan D. Cohen. Levels of Programming Concepts Used in Computing Integration Activities across Disciplines. In Journal of Technology and Teacher Education (JTATE), 2023.

[J4] **Miranda C. Parker**. Barriers and Supports to Offering Computer Science in High Schools: A Case Study of Structures and Agents. In ACM Transactions on Computing Education (TOCE), 2023.

[J3] **Miranda C. Parker**, Katie A. Hendrickson. Capacity-Related Factors Associated with Computer Science Access and Participation in Georgia Public High Schools. In Policy Futures in Education, 2022.

[J2] Joey Huang, **Miranda C. Parker**. Developing Computational Thinking Collaboratively: The Nexus of Computational Practices within Small Groups. In Computer Science Education, 2022.

[J1] Sharin R. Jacob, **Miranda C. Parker**, Mark Warschauer. Integration of Computational Thinking Into English

Language Arts. In Computational Thinking in PreK-5: Empirical Evidence for Integration and Future Directions, 2022.

Peer-Reviewed Conference Papers

* indicates shared first-authorship or co-leader

[C19] **Miranda C. Parker**, He Ren, Min Li, Chun Wang. "Intersectional Biases Within an Introductory Computing Assessment." Special Interest Group on Computer Science Education (SIGCSE) Technical Symposium, 2024.

[C18] **Miranda C. Parker**, Matt J. Davidson, Yvonne S. Kao, Lauren E. Margulieux, Zachary R. Tidler, and Jan Vahrenhold. "Toward CS1 Content Subscales: A Mixed-Methods Analysis of an Introductory Computing Assessment." Koli Calling International Conference on Computing Education Research (Koli Calling), 2023.

[C17] Kathryn Cunningham, **Miranda C. Parker***, Jonathan Zhang. "The Landscape of Computer Science Education Courses: A Syllabi Analysis." Koli Calling International Conference on Computing Education Research (Koli Calling), 2023.

[C16] Steven Bradley, **Miranda C. Parker***, Rukiye Altin, Lecia Barker, Sara Hooshangi, Thom Kunkeler, Ruth G. Lennon, Fiona McNeill, Juli Minguilln, Jack Parkinson, Svetlana Peltsverger, and Naaz Sibia. "Modeling Womens Elective Choices in Computing." Innovation and Technology in Computer Science Education (ITiCSE) Working Group, 2023.

[C15] Leiny Garcia, **Miranda C. Parker**, Santiago Ojeda-Ramirez, Mark Warschauer. "Confidence is the Key: Unlocking Predictive Factors of Latinx Elementary Students on a Computational Thinking Measure." Special Interest Group on Computer Science Education (SIGCSE) Technical Symposium, 2023.

[C14] **Miranda C. Parker**, Leiny Garcia, Yvonne S. Kao, Diana Franklin, Susan Krause, Mark Warschauer. "A Pair of ACES: An Analysis of Isomorphic Questions on an Elementary Computing Assessment." ACM Conference on International Computing Education Research (ICER), 2022.

[C13] **Miranda C. Parker**, Mark Guzdial, Allison Elliott Tew. "Uses, Revisions, and the Future of Validated Assessments in Computing Education: A Case Study of the FCS1 and SCS1." ACM Conference on International Computing Education Research (ICER), 2021.

[C12] Briana B. Morrison, Beth Quinn, Steven Bradley, Kevin Buffardi, Brian Harrigton, Helen H. Hu, Maria Kallia, Fiona McNeill, Oluwakemi Ola, **Miranda C. Parker**, Jennifer Rosato, Jane Waite. 2021. "Chronicling the Evidence for Broadening Participation." Innovation and Technology in Computer Science Education (ITiCSE) Working Group, 2021.

[C11] **Miranda C. Parker**, Yvonne S. Kao, Dana Saito-Stehberger, Diana Franklin, Susan Krause, Debra Richardson, Mark Warschauer. "Development and Preliminary Validation of the Assessment of Computing for Elementary Students (ACES)." Special Interest Group on Computer Science Education (SIGCSE) Technical Symposium, 2021.

[C10] Nickolas Falkner, Rebecca Vivian, Katrina Falkner, Vangel V. Ajanovski, Christine Liebe, Alistair Morrison, **Miranda Parker**. "Meaningful Assessment at Scale: Helping Instructors to Assess Online Learning." Innovation and Technology in Computer Science Education (ITiCSE) Working Group, 2020.

[C9] **Miranda C. Parker**, Amber Solomon, Brianna Pritchett, David A. Illingworth, Lauren E. Margulieux, Mark Guzdial. "Socioeconomic Status and Computer Science Achievement: Spatial Ability as a Mediating Variable in a Novel Model of Understanding," ACM Conference on International Computing Education Research (ICER), 2018.

[C8] **Miranda C. Parker**, Kantwon Rogers, Barbara J. Ericson, Mark Guzdial. "Students and Teachers Use An Online AP CS Principles EBook Differently: Teacher Behavior Consistent with Expert Learners," ACM Conference on International Computing Education Research (ICER), 2017.

[C7] **Miranda C. Parker**, Leigh Ann DeLyser. "Concepts and Practices: Designing and Developing A Modern K–12 CS Framework," Special Interest Group on Computer Science Education (SIGCSE) Technical Symposium, 2017.

[C6] **Miranda C. Parker**, Mark Guzdial, Shelley Engleman. "Replication, Validation, and Use of a Language Independent CS1 Knowledge Assessment," ACM Conference on International Computing Education Research (ICER), 2016.

[C5] Barbara J. Ericson, Kantwon Rogers, **Miranda C. Parker**, Briana Morrison, Mark Guzdial. "Identifying Design Principles for CS Teacher Ebooks through Design-Based Research," ACM Conference on International Computing Education Research (ICER), 2016.

[C4] Barbara J. Ericson, **Miranda C. Parker**, Shelley Engleman. "Sisters Rise Up 4 CS: Helping Female Students Pass the Advanced Placement Computer Science A Exam," Special Interest Group on Computer Science Education (SIGCSE) Technical Symposium, 2016.

[C3] **Miranda Parker**, Mark Guzdial. "A Critical Research Synthesis of Privilege in Computing Education," Research on Equity and Sustained Participation in Engineering, Computing, and Technology (RESPECT), 2015.

[C2] **Miranda Parker**, Colleen Lewis. "What Makes Big-O Analysis Difficult: Understanding How Students Understand Runtime Analysis," Consortium for Computing Science in Colleges (CCSC), Southwestern Region, 2014.

[C1] Christine Alvarado, Andy Kearny, Alexa Keizur, Calvin Loncaric, **Miranda Parker**, Jessica Peck, Kiley Sobel, Fiona Tay. "LogiSketch: A Free-Sketch Digital Circuit Design and Simulation System," Workshop on the Impact of Pen and Touch Technology in Education (WIPTTE), 2013.

Posters, presentations, and panels

[P20] He Ren, Chun Wang, Min Li, **Miranda Parker**. "Detecting Intersectional Differential Item Functioning: A Comparison of Two Methods," AERA Annual Meeting, 2024, Philadelphia, PA.

[P19] Francisco Castro, Joseph Wilson, Jessica Vandenberg, Juho Leinonen, **Miranda C. Parker**. "Computing Education Postdocs and Beyond: Building a Postdoc Space for Community and Collaboration," Special Interest Group on Computer Science Education (SIGCSE) Technical Symposium, 2023.

[P18] Santiago Ojeda-Ramirez, **Miranda C. Parker**, Leiny Garcia, Tamara Tate, Jillian Rae Villa, Mark Warschauer. "Computational Thinking and Attitudes Towards Computing: An Emerging Relationship in Elementary Students," Special Interest Group on Computer Science Education (SIGCSE) Technical Symposium, 2023.

[P17] **Miranda C. Parker**, Yvonne S. Kao. "How Do You Know if They Don't Know? The Design of Pre-Tests in Computing Education Research," Special Interest Group on Computer Science Education (SIGCSE) Technical Symposium, 2022.

[P16] Francisco Enrique Vicente Castro, Kathryn Cunningham, **Miranda C. Parker**. "What's Up, Doc? Building a Community of Computing Education Postdocs," Special Interest Group on Computer Science Education (SIGCSE) Technical Symposium, 2022.

[P15] Shana White, **Miranda Parker**, Sarah Dunton, Mariam SaffarPerez, Colleen Lewis. "Leveraging Data for Good: Using Data to Create Equitable K-12 CS Education" CMD-IT/ACM Richard Tapia Celebration of Diversity in Computing Conference, 2021.

[P14] Lien Diaz, Jeff Forbes, Carol Fletcher, **Miranda Parker**. "Collaborative Projects and Narratives on Broadening Participation in Computing" CMD-IT/ACM Richard Tapia Celebration of Diversity in Computing Conference, 2020.

[P13] **Miranda C. Parker**. "Computer Science in Georgia Public High Schools" [Roundtable Session]. AERA Annual Meeting 2020, San Francisco, CA http://tinyurl.com/uor9bhx (Conference Canceled).

[P12] **Miranda C. Parker**, Mark Guzdial. "A Statewide Quantitative Analysis of Computer Science: What Predicts CS in Georgia Public High School?," ACM Conference on International Computing Education Research (ICER), 2019.

[P11] **Miranda Parker**, Jason T. Black, Helen Hu, Colleen Lewis. "Exploring our Privilege: Activities and Discussions" Special Interest Group on Computer Science Education (SIGCSE) Technical Symposium, 2019.

[P10] **Miranda Parker**. "A K12 CS Framework: Creating a Foundation for the Future for All Students," ACM Conference on International Computing Education Research (ICER), 2016.

[P9] **Miranda C. Parker**. "Replicating a Validated CS1 Instrument," Special Interest Group on Computer Science Education (SIGCSE) Technical Symposium, 2016.

[P8] **Miranda Parker**. "Designing an eBook for Computer Science Principles Students," ACM Conference on International Computing Education Research (ICER), 2015.

[P7] **Miranda Parker**, Kayla Desportes, Vivian Chu, Brianna Tomlinson, Tesca Fitzgerald, Samantha Lo, Ewa Deelman, Suju Rajan. "What is this graduate school thing? Information and advice from current graduate women in Computer Science," Southeast Women in Computing Conference, 2015.

[P6] Janet Davis, Christine Alvarado, **Miranda C. Parker**, Jennelle Nystrom. "Preparing Undergraduates To Make The Most Of Attending CS Conferences" Special Interest Group on Computer Science Education (SIGCSE) Technical Symposium, 2015.

[P5] Morgan A. Mastrovich, **Miranda Parker**, Colleen Lewis. "What do you mean it isn't a meritocracy?" Grace Hopper Celebration of Women in Computing, 2014.

[P4] **Miranda Parker**, Colleen Lewis. "What Makes Big-O Analysis Difficult: Understanding How Students Understand Runtime Analysis," The Celebration of Women in Computing, Southern California, 2014.

[P3] **Miranda Parker**, Colleen Lewis. "Why is Big-O Analysis Hard?," Koli Calling, 2013.

[P2] **Miranda Parker**. "Why is Big-O Analysis Difficult?," Consortium for Computing Science in Colleges (CCSC), Southwestern Region, 2013.

[P1] **Miranda Parker**. "Adaptive Sketch-Based Recognition Techniques," The Celebration of Women in Computing, Southern California, 2012.

Other Articles

[A3] "Computer Science for Multilingual Students". Report from the AERA Educational Research Conference. September 22, 2021.

[A2] Mark Guzdial, Barbara Ericson, Briana Morrison, **Miranda Parker**, Neethi Pathak, Matthew Moldavan, and Kantwon Rogers. "Supporting STEM Learning by Redesigning the Textbook: Creating High-Completion CS Online Learning Using Educational Psychology Principles". Paper presented at the annual American Association for the Advancement of Science (AAAS) conference in Washington, DC. January 2016.

[A1] Barbara Ericson, Mark Guzdial, Briana Morrison, **Miranda Parker**, Matthew Moldavan, and Lekha Surasani. 2015. "An eBook for teachers learning CS principles". ACM Inroads 6, 4 (November 2015), 84-86.

Workshops

[W2] **Miranda Parker**, Mark Guzdial. "Equity Versus Equality: A Proposed Study of Issues of Justice in Computer Science Education." Workshop on Exploring Social Justice, Design, and HCI. CHI, 2016.

[W1] **Miranda C. Parker**. "Privilege and Computer Science Education: How can we level the playing field?." Doctoral Consortium. ACM Conference on International Computing Education Research (ICER), 2015.

Invited Talks

[T7] **Barriers and Supports to Offering Computer Science in High Schools: A Case Study of Structures and Agents.** ACM TOCE session at SIGCSE Technical Symposium. March 2024.

[T6] **Computer Science Education Research: The What, Why, and How of Computing for All Students.** Center for Research on Math and Science Education (CRMSE) Colloquium. September 2022.

[T5] **Research in Computing for the Social Good.** Panel. SIGCAS Annual Showcase. September 2022.

[T4] **How to Use and Teach Runtime Analysis.** Duke University. January 2020.

[T3] **Replication, Validation, And Use Of A Multi-lingual Pseudocode-based Introductory Computer Science Assessment.** University of California, Irvine. January 2020.

[T2] **How We Compute Correlations: What They Mean And Why They Matter.** Rose-Hulman Institute of Technology. January 2020.

[T1] **Barriers to Computing: What Prevents CS for All.** Carnegie Mellon University. November 2018.

RESEARCH FUNDING

Funding pending
National Science Foundation, Division of Undergraduate Education
Improving Undergraduate STEM Education (IUSE) Level 1
Collaborative Research: Development and Validation of a Versatile and Equitable CS1 Assessment
Principle Investigator: Miranda Parker
Proposed funding: $143,278
Proposed duration: August 2024 - July 2026

Funding awarded
San Diego State Unversity, Seed Grant program
Training Spatial Skills to Improve Outcomes in Computer Science
Principle Investigator: Miranda Parker
Funding: $7,470
Duration: January-December 2023

National Science Foundation, Graduate Research Fellowship Program
Duration: August 2014 - August 2019

Grants contributed to
National Science Foundation, Education & Human Resource directorate
Collaborative Network of Grades 3-5 Educators for Computational Thinking for English Learners (CONECTAR)
Principle Investigator: Mark Warschauer
Funding: $1,060,000 (to University of California, Irvine)
Duration: September 2019 - August 2022
Related publications: [J1, J6, C11, C14, C15]

Department of Education, Education Innovation Research
Improving Pedagogy to Accelerate Computational Thinking (IMPACT)
Principle Investigator: Mark Warschauer

Funding: $4,000,000 (to University of California, Irvine)
Duration: September 2019 - August 2024
Related publications: [J1, J6, C11, C14, C15]

National Science Foundation, Education & Human Resource directorate
Collaborative Research: Creating High-Completion CS Online Learning Using Educational Psychology Principles
Principle Investigator: Mark Guzdial
Funding: $684,994 (to Georgia Institute of Technology)
Duration: October 2014 - September 2018
Related publications: [C5, P8, A1, A2]

TEACHING EXPERIENCE

Courses Taught

Spring 2024	**Introduction to Software Systems** (undergraduate, 60 students)
Fall 2023	**Introduction to Software Systems** (undergraduate, 60 students)
	San Diego State University
Spring 2023	**Introduction to Software Systems** (undergraduate, 60 students)
	San Diego State University
Fall 2022	**Introduction to Software Systems** (undergraduate, 48 students)
	San Diego State University
Spring 2018	**Educational Technology** (undergraduate, 59 students)
	Georgia Tech
Summer 2014	**Computer Science 1** (high school, 19 students)
	SMASH Academy, Stanford University

Teaching Assistantships

Aug. 2019-Dec. 2019	**Technology, Society and Professionalism** (undergraduate, 49 students)
	Instructor: Ben Rydal Shapiro, Georgia Tech
Aug. 2016-Dec. 2016	**Technology, Society and Professionalism** (undergraduate, 42 students)
	Instructor: Beki Grinter, Georgia Tech
Aug. 2013-May 2014	**Software Development** (undergraduate, 64 students per semester)
	Instructor: Mike Erlinger, Harvey Mudd College
Aug. 2012-May 2013	**Data Structures** (undergraduate, 80 students per semester)
	Instructors: Melissa O'Neill & Ben Wiedermann, Harvey Mudd College

Guest Lectures

October 17, 2019	**Getting Personal with Data and Privacy**, *Computing, Society & Professionalism* (undergraduate, 49 students), College of Computing, Georgia Tech
October 12, 2017	**MOOCs**, *Educational Technologies* (undergraduate, 164 students), College of Computing, Georgia Tech
September 28, 2017	**Teaching Methods in Introductory Computer Science**, *Computing Education Research* (graduate, students), College of Computing, Georgia Tech
April 4, 2016	**Topics in Computer Science: Speed**, *Introduction to Media Computation* (undergraduate, 164 students), College of Computing, Georgia Tech
April 1, 2016	**Topics in Computer Science: Speed**, *Introduction to Media Computation* (undergraduate, 164 students), College of Computing, Georgia Tech
April 8, 2015	**Big-O and Sorting**, *Introduction to Media Computation* (undergraduate, 110 students), College of Computing, Georgia Tech
February 23, 2015	**Sampling to Transform Pictures**, *Introduction to Media Computation* (undergraduate, 110 students), College of Computing, Georgia Tech

Volunteer Teaching

Sept. 2015-May 2017	**Girls Who Code** (high school, 8-10 students), Cristo Rey Jesuit High School, Atlanta, GA	
June 2013-Aug. 2013	**HIV/AIDS Prevention Education** (village, 1300 individuals), Support for International Change, Arusha, Tanzania	
Sep. 2010-Dec. 2012	**Science and Math Lessons** (4th and 5th grade, 30 students per semester), Science Bus (a Claremont Colleges STEM Outreach Program), Claremont, CA	

SERVICE

Leadership

2023	Hybrid Experience Co-Chair	International Computing Education Research Conference (ICER)
2020 - 2021	Lightning Talks and Posters Co-Chair	International Computing Education Research Conference (ICER)
2018 - 2019	Dean Search Committee Member	Georgia Tech College of Computing
2016 - 2018	Ombudsperson	Georgia Tech School of Interactive Computing
2015 - 2016	Assistant Vice President	Georgia Tech College of Computing Graduate Student Council
2015 - 2017	Co-Leader	Graduate Women @ College of Computing, Georgia Tech
2015	Coach	USA Computing Olympiad Training Camp
2011 - 2014	Resident Advisor and Dorm Mentor	Harvey Mudd College
2010 - 2013	Honor Board Chair and Representative	Harvey Mudd College
2011 - 2012	President, Science Bus	Claremont Colleges STEM Outreach Program

Student Mentoring

Students are listed if they worked with me for more than one semester or on an independent project.

San Diego State University
Doctoral students:
Kristin Tenney, Ph.D. Math and Science Education (Dissertation Committee)
Austin Zuckerman, Ph.D. Math and Science Education (Dissertation Committee)
Master's students:
Dan Houston, MS Computer Science (Thesis Advisor)
Undergraduate students:
Kelly Aycock, BS Computer Science
Zayd Dixon, BS Computer Science
Francis Fernandez, BS Computer Science
Yan Ho, BS Computer Science
David Kaauwai, BS Computing Science & Mathematics
Sophie Krivonosov, BS Computer Science
Alexis Lee, BS Computer Science
James Marsh, BS Computer Science
Anna Nguyen, BS Computer Science
Chloe Salazar, BS Computer Science
Garen Vehouni, BS Computer Science

University of California, Irvine
Doctoral students:
Leiny Garcia, Ph.D. Education
Sharin Jacob, Ph.D. Education
Santiago Ojeda Ramirez, Ph.D. Education

Georgia Tech

Master's students:
Kantwon Rogers, MS Human-Computer Interaction
Undergraduate students:
Rhea Chatterjee, BS Computer Science
Ashima Gauba, BS Computer Science
Bryce Watson, BS Computer Science

Reviewing

Conferences:
Special Interest Group in Computer Science Education (SIGCSE) 2017-2024
ACM Conference on International Computing Education Research (ICER) 2020-2023
Innovation and Technology in Computer Science Education (ITiCSE) 2017-2023
Global Computing Education (CompEd) 2019-2023
WiPSCE Conference on Primary and Secondary Computing Education Research (WiPSCE) 2023
ACM Conference on Human Factors in Computing Systems (CHI) 2020-2022
American Education Research Association (AERA) 2022
Research in Equity and Sustained Participation in Engineering, Computing, and Technology (RESPECT) 2016

Journals:
Transactions on Computing Education
Computer Science Education
IEEE Transactions on Education
Information and Learning Science
Journal of Science Education and Technology
AERA Open
Journal of Cognitive Psychology
Educational Administration Quarterly

Profession:
National Science Foundation Review Panels:
Research Experience and Mentoring (REM), 2023 Computer Science for All (CSforAll), 2021 Discovery Research
PreK-12 (DRK-12), 2020

AWARDS AND HONORS

2018	Heidelberg Laureate Forum Young Researcher
	Foley Scholar Finalist, GVU Center, Georgia Tech
2017	Foley Scholar Finalist, GVU Center, Georgia Tech
2016	Google Anita Borg Memorial Scholarship
2014	1st place, Convergence Innovation Competition, "GT Community and beyond" category
	President's Fellow, Georgia Tech
	National Science Foundation Graduate Student Research Fellow
	Don Chamberlin Research Award, Harvey Mudd College
	Outstanding Student Leader, Harvey Mudd College
	Best Research Presentation, Celebration of Women in Computing, Southern California
	Honorable Mention, Computing Research Association's Outstanding Undergraduate Researcher Award (Female)
2013	Deans List, Spring, Harvey Mudd College
	Ben Huppe '14 Memorial Internship for a Sustainable World, Harvey Mudd College
2012	Deans List, Fall, Harvey Mudd College

SELECTED PRESS COVERAGE

"Two Real Programmers Fix This Sexist Barbie Computer Engineering Book." Popular Mechanics. Nov. 19, 2014.
URL: http://bit.ly/1AHLNqn

"Two Women Fixed This Disturbingly Sexist Barbie Book." Cosmopolitan Magazine. Nov. 19, 2014. URL:
http://bit.ly/11yqMEf