Matt Superdock

EDUCATION

Ph.D. in Algorithms, Combinatorics, and Optimization **Aug. 2021**
Carnegie Mellon University
- Dissertation: "Topics in topological combinatorics: Simplicial complexes, finite geometries, and the topology of circle-valued maps."
- Advisor: Florian Frick

Certification in High School Math & CS Education **Feb. 2014**
Princeton University, Program in Teacher Preparation
- Certifications in "Mathematics" and "Technology, Engineering, and Design"
- New Jersey Distinguished Student Teacher Award

A.B. in Mathematics **Jun. 2013**
Princeton University
- Thesis: "The Graceful Tree Conjecture: A Class of Graceful Diameter-6 Trees"
- Putnam Mathematics Competition Honorable Mention (2011, 2012)

ACADEMIC POSITIONS

Assistant Professor **Aug. 2023-present**
Rhodes College, Department of Computer Science

Visiting Assistant Professor **Aug. 2021-May 2023**
Rhodes College, Department of Mathematics and Computer Science

High School Math & CS Teacher **Aug. 2014-Jun. 2017**
Durham Public Schools, Charles E. Jordan High School

PUBLICATIONS

Quantifying discontinuity
(submitted)
with Henry Adams, Florian Frick, Michael Harrison, Nikola Sadovek

Gromov-Hausdorff distances, Borsuk-Ulam theorems, and Vietoris-Rips complexes
(accepted to Algebraic & Geometric Topology)
with Henry Adams, Johnathan Bush, Nate Clause, Florian Frick, Mario Gómez, Michael Harrison, R. Amzi Jeffs, Evgeniya Lagoda, Sunhyuk Lim, Facundo Mémoli, Michael Moy, Nikola Sadovek, Daniel Vargas, Qingsong Wang, Ling Zhou.

Vertex numbers of simplicial complexes with free abelian fundamental group
Ars Mathematica Contemporanea 25 (2025), #1.05
with Florian Frick

Simplicial complexes from finite projective planes and colored configurations
Discrete Mathematics 346(1):113117 (Aug. 2022)

Clean tangled clutters, simplices, and projective geometries
Journal of Combinatorial Theory, Series B 154 (Dec. 2021)
with Ahmad Abdi, Gérard Cornuéjols

A new infinite class of ideal minimally non-packing clutters
Discrete Mathematics 344(7):112413 (Apr. 2021)
with Ahmad Abdi, Gérard Cornuéjols

A nonlinear Lazarev-Lieb theorem: L^2-orthogonality via motion planning
Journal of Topology and Analysis 14, No. 3, 569-585 (Nov. 2020)
with Florian Frick

INVITED TALKS

March 6, 2025
A discontinuous ham sandwich theorem
Spring Topology & Dynamics Conference (Newport News, VA)

April 15, 2023
Quantifying discontinuity
AMS Special Session on Topological and Geometric Methods in Combinatorics (Cincinatti, OH)

November 18, 2022
Small simplicial complexes with fundamental group Z^n
University of Memphis Combinatorics Seminar

April 28, 2022
Simplicial complexes and fundamental groups
Rhodes College Math Seminar

March 29, 2022
Small simplicial complexes with fundamental group Z^n
Iowa State University Discrete Math Seminar

November 21, 2021
Simplicial complexes, finite projective planes, and colored configurations
AMS Special Session on Topological Methods in Discrete Mathematics (remote)

October 22, 2020
The necklace splitting problem and robot motion planning.
Algorithms, Combinatorics, and Optimization Seminar, Carnegie Mellon University

TEACHING

Assistant Professor, Rhodes College, CS (Memphis, TN) **Aug. 2023-present**

- Spring 2026: Theory of Computation (COMP350)
- Spring 2026: Senior Seminar (COMP486)
- Spring 2025: Theory of Computation (COMP350)
- Spring 2025: Programs & Proofs with Dependent Types (COMP367)
- Fall 2024: Discrete Structures for Computer Science (COMP172)
- Fall 2024: Advanced Algorithms (COMP355)
- Fall 2023: Programming Fundamentals (COMP141; 2 sections)
- Fall 2023: Advanced Algorithms (COMP355)

Visiting Assistant Professor, Rhodes College, Math & CS (Memphis, TN) **Aug. 2021-May 2023**

- Spring 2023: Discrete Structures for Computer Science (COMP172)
- Spring 2023: Data Structures & Algorithms (COMP241)
- Spring 2023: Theory of Computation (COMP350)
- Fall 2022: Data Structures & Algorithms (COMP241; 2 sections)
- Fall 2022: Advanced Algorithms (COMP355)
- Spring 2022: Programming Fundamentals (COMP141; 3 sections)
- Fall 2021: Programming Fundamentals (COMP141; 2 sections)
- Fall 2021: Advanced Algorithms (COMP355)

Instructor, Carnegie Mellon University (Pittsburgh, PA) **Fall 2019**
- Fall 2019: Matrix Algebra with Applications (21-240; 73 students)

Teaching Assistant, Carnegie Mellon University (Pittsburgh, PA) **Aug. 2017-Jun. 2021**
- Spring 2021: Probabilistic Combinatorics (21-737; graduate)
- Fall 2020: Advanced Topics in Discrete Mathematics (21-801; graduate)
- Fall 2018: Multidimensional Calculus (21-268)
- Fall 2018: Combinatorics (21-301)
- Spring 2018: Discrete Mathematics (21-228)
- Fall 2017: Integration & Approximation (21-122)

Math & CS Teacher, Durham Public Schools (Jordan High, Durham, NC) **Aug. 2014-Jun. 2017**
- Main teaching assignments: AP Computer Science A, AP Calculus AB/BC.
- Advocated for the school to offer Mobile Computer Science Principles, a class centered around Android application development, and taught two sections in 2015-16.
- Contributed to increased enrollment in AP Calculus AB/BC (from 23 in 2014-15 to 57 in 2016-17) and AP Computer Science A (from 17 in 2014-15 to 50 in 2016-17)
- Coached the school's math team, planning and running weekly practices.
- Advised a 12th grade student in an independent study of multivariable calculus.
- Delivered a speech at the National Honor Society induction ceremony in May 2016 after being selected through a vote by the senior students in the society.

Instructor, IDEA MATH Summer Programs (Pittsburgh/San Jose/Nashua) **2013, 2015**
- Trained middle and high school students to solve challenging math competition problems.
- Taught students to write rigorous mathematical proofs.

Education Consultant, Expii, Inc. (Pittsburgh, PA; worked remotely) **Feb. 2014-Aug. 2015**
- Developed detailed concept maps of calculus & geometry, along with another consultant.
- As one of the first ten employees, helped guide the vision of the Expii website.

Grader & Researcher, Math. Olympiad Summer Program (Lincoln, NE) **Jun. 2013**
- Graded exams and led review sessions for the top high school math students in the United States.
- Collaborated with a professor and another grader on a problem in extremal combinatorics.

Organizer & Instructor, Summer Math Contest Class (Lehigh, PA) **Jun. 2011-Jul. 2011**
- Trained fifteen middle and high school students in problem solving for math competitions.
- Developed a series of 10 three-hour seminars covering a range of mathematical topics and skills.

SERVICE

Search Committee Member. (for Assistant/Associate Professor of CS) **Fall 2024**
Open Rhodes Advisor. (two sessions) **Summer 2022**
Search Committee Member. (for Visiting Assistant Professor of CS) **Spring 2022**
Computer Science Tutoring Training. **Spring 2022**

SOFTWARE

- agda-unused – Check for unused code in an Agda project (Haskell).
- vim-agda – Asynchronous type-checking for Agda 2.6.2 (Vimscript).

INDUSTRY

Data Science Consultant, Automated Insights, Inc. (Durham, NC) **Summer 2016, 2017**
- Developed algorithms in JavaScript for language and style translation of "templates," a data structure generating written content, using Microsoft Translate and Stanford CoreNLP API's.

Research & Development Intern, Lockheed Martin (King of Prussia, PA) **Jun. 2010-Aug. 2010**
- Developed an algorithm in C to triangulate an object from noisy data using gradient descent.