

Nathan H. Carter

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May 2026

EDUCATION

- **B.S. Mathematics**, Minors in Data Analytics & Computational Analytics 2024–2027
President's List, James Madison University, Harrisonburg, VA
- **A.A.S. General Studies**, Mountain Empire Community College 2022–2024
(Earned concurrently with High School Diploma via Dual Enrollment)

RESEARCH EXPERIENCE

- **Mathematics Researcher**, Optimization & Algorithmic Theory Laboratory 2026
Department of Mathematics and Statistics, James Madison University
 - Investigated the stability of proximal average relaxation for signal recovery under measurement noise and operator perturbations.
 - Formulated explicit quantitative sensitivity bounds demonstrating linear error scaling and validated theoretical results using Tikhonov-regularized image reconstruction models.
- **Undergraduate Researcher**, Department of Education, James Madison University 2025
 - Developed a strong foundation in qualitative research design, ethics, and academic writing to complement quantitative modeling methodologies.

INDUSTRY EXPERIENCE

- **DevOps Engineer Intern**, CGI, Lebanon, VA 2025–2026
 - Managed lifecycle stability for four major repository forks within the DOTA (Tools and Automation) department; utilized Jenkins and Git to maintain high-integrity CI/CD pipelines for large-scale development branches.
- **Software Engineer Intern**, CGI, Lebanon, VA 2025
 - Engineered a Python-based automation framework for code analytics, achieving a 300x increase in processing speed and streamlining cross-departmental data reporting.

PUBLICATIONS & MANUSCRIPTS IN PREPARATION

- **N. Carter**, K. Scafe, & Z. Woodstock. *Stability of Proximal Average Relaxation for Signal Recovery*. (Manuscript in preparation).
- **N. Carter** & H. Hamdan. *Using Scale Mixtures of Normals to Model Continuously Compounded Returns*. (Manuscript in preparation).

PRESENTATIONS & POSTERS

- **James Madison University CSM Summer Symposium**, Harrisonburg, VA July 2026
Stability of Proximal Average Relaxation for Signal Recovery (Undergraduate Talk)
- **James Madison University Student Colloquium**, Harrisonburg, VA May 2026
Normal Mixture Density Estimation for Major US Stocks: A Four-Year Empirical Study (Undergraduate Talk)

- **M.A.A. MD-DC-VA Section Meeting**, Frederick, MD April 2026
Normal Mixture Density Estimation for Major US Stocks: A Four-Year Empirical Study (Contributed Talk)
- **James Madison University FYRE Symposium**, Harrisonburg, VA October 2025
A Comprehensive Examination of University-Based Induction Support for Early Career Teachers (Poster Presentation)

TEACHING & TUTORING EXPERIENCE

- **Teaching Assistant / Learning Assistant**, James Madison University 2026
MATH 205: Applied Calculus
 - Assisted primary instructor during active-learning class sessions, guiding students through problem sets.
 - Held weekly office hours to provide one-on-one instruction on foundational calculus and problem-solving strategies.
- **Mathematics Tutor**, World Tutor 2024–2025
 - Provided remote mathematics instruction and homework support for students in grades 1–9.

AWARDS AND HONORS

- **Klippert & Mills Math Scholarship**, James Madison University 2026
- **Jeffrey E. Tickle Scholarship in Mathematics**, James Madison University 2026
- **Mathematics Department Scholarship**, James Madison University 2026
- **Phi Kappa Phi Honor Society** (Top 7.5% of Junior Class) 2026
- **President's List**, James Madison University (3.95 GPA) 2025–2026
- **FYRE Research Fellowship**, First-Year Research Experience 2025
- **Centennial Scholars Program**, Merit-based full-tuition scholarship 2024–2027
- **Summa Cum Laude**, Mountain Empire Community College (4.0 GPA) 2024

COURSEWORK & TECHNICAL SKILLS

- **Mathematics Coursework:** Advanced Calculus I (Analysis), Abstract Algebra I, Advanced Linear Algebra, Modern Optimization, Differential Equations, Topology, Graph Theory, Discrete Math
- **Statistics Coursework:** Applied Linear Regression, Machine Learning, Data Analysis & Visualization, Mixture Modeling, Introduction to Data Science
- **Programming Languages:** Python, R, Java, Bash, Julia
- **Tools & Software:** $\text{\LaTeX}$, Beamer, Git, GitHub, Linux/Unix, Vim, Jenkins CI/CD

PROFESSIONAL AFFILIATIONS

- **Mathematical Association of America (MAA)** 2026–Present
- **American Statistical Association (ASA)** 2026–Present
- **The Honor Society of Phi Kappa Phi** 2026–Present