

Keene Meckfessel

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EDUCATION

Georgia Institute of Technology

Master of Science in Mathematics

Atlanta, GA

Aug. 2026 – May. 2028

Florida State University

Bachelor of Science in Pure Mathematics

Bachelor of Science in Computer Science

3.81 / 4.0 GPA

Tallahassee, FL

Jan. 2023 – Dec. 2025

Jan. 2023 – Dec. 2025

Relevant Coursework *Abstract Algebra I & II, Real Analysis I & II, Elementary Topology, Theory of Numbers, Partial Differential Equations*

RESEARCH EXPERIENCE

Undergraduate Research Assistant

Florida State University

Apr. 2024 – Present

Tallahassee, FL

Advisor: Professor Michael Mascagni

- Explored alternative formulations of boundary value problems for partial differential equations in the context of computational mathematics.
- Developed and delivered a technical presentation on bounding volume hierarchies, showcasing applications in computational geometry and optimization.
- Investigated quantum random number generation methods and their applications to Monte Carlo simulations and stochastic modeling.

Directed Reading Program Participant

Florida State University

Oct. 2025 – Apr. 2026

Tallahassee, FL

- Selected to participate in a multi-semester research project under the FSU Directed Reading Program, working with a Ph.D. student mentor and two undergraduate collaborators.
- Investigating fractal structure in financial markets through analysis of power-law scaling, heavy tails, and long-range dependence in equity and FX returns.
- Applying methods such as tail exponent estimation, Hurst parameter computation (R/S and DFA), and comparison of Lévy-stable versus Gaussian benchmarks, with results to be presented in a poster and potential paper.

SELECTED PROJECTS

Walk on Spheres PDE Solver | C++

- Implemented a Monte Carlo solver for Laplace's equation using the Walk on Spheres algorithm.
- Applied multiple solution methods described in recent research, demonstrating ability to read and implement state-of-the-art techniques.
- Analyzed convergence behavior to evaluate numerical accuracy.

CPU Ray Tracer | C++

- Implemented a physically based ray tracer using Monte Carlo methods to simulate global illumination and realistic light transport.
- Incorporated recursive reflection, refraction, and importance sampling to achieve accurate rendering of complex materials.
- Optimized performance through spatial partitioning structures and vectorized math operations.

TEACHING/MENTORING EXPERIENCE

Women in Computer Science Mentor

Aug. 2024 – May 2025

Florida State University

Tallahassee, FL

- Mentored undergraduate students in the Women in Computer Science club, providing guidance on research opportunities and academic success strategies at FSU.
- Designed and organized engaging recreational events to foster community and collaboration among club members.
- Supported and inspired new students to pursue research and professional development in computer science.

AWARDS

Phi Beta Kappa Honor Society | Florida State University

Fall 2025

FSU ACM Programming Contest Upper Division | Top 10

Nov. 2024

- Achieved the highest score among individual participants.

FSU ACM Programming Contest Lower Division | Sixth Place

Nov. 2023

President’s List | Florida State University

Fall 2024

Dean’s List | Florida State University

Multiple Semesters, 2023–2025

TECHNICAL SKILLS

Mathematical and Scientific Computing: C, C++, Python, R, LaTeX, NumPy, pandas, PyTorch, Matplotlib

Computational Techniques: Monte Carlo simulation, numerical PDEs, stochastic modeling

Developer Tools: Linux, Git, Neovim, VS Code