

Michael P. Kerr

Athens, GA
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Research Interests Computational geographer bridging topological data analysis, spatial statistics, and high-performance computing to model environmental systems. Transforming high-dimensional data using interpretable, predictive models to support decision-making frameworks for resilience and social equity.

EDUCATION

The University of Georgia <i>Master of Science in Geography</i>	Athens, GA Expected May 2028
The University of Georgia <i>Bachelor of Science in Applied Mathematics and Geography</i>	Athens, GA August 2026
<i>Bachelor of Arts in Geography</i>	August 2026
Minor: Computer Science	Cum Laude
Certificate: Geographic Information Science	

RELEVANT COURSEWORK

- **Mathematics:** Real Analysis, Point Set Topology, Partial Differential Equations, Numerical Analysis, Probability
- **Computer Science:** Data Structures, Theory of Computing, Data Mining, Data Science and Applied Machine Learning
- **Geography:** Geospatial Artificial Intelligence, Fluvial Geomorphology, People Planet and Profit: Caring for Country

RESEARCH EXPERIENCE

Department of Geography, University of Georgia <i>Graduate Researcher, Vertically Integrated Projects for Research</i> Advisors: Deepak Mishra, PhD; Nancy O'Hare, PhD	Athens, GA August 2026 – Present
• Define comparison metrics (M3C2) and establish a level of detection to distinguish change from measurement noise. • Implement a reproducible point-cloud comparison pipeline using py4dgeo with visualizations in CloudCompare.	
Department of Mathematics, University of Georgia <i>Directed Reading Program Student</i> Mentor: Cameron Thomas, PhD Candidate	Athens, GA August 2025 – December 2025
• Used persistent-homology to extract multiscale Betti-curves from 30,000+ LiDAR-derived digital elevation models. • Validated features as statistically equivalent to established geomorphometrics for mapping surficial geology.	
Department of Agricultural and Applied Economics, University of Georgia <i>Undergraduate Researcher</i> Advisor: Craig Landry, PhD	Athens, GA July 2024 – June 2025
• Preprocessed, visualized, and trained on 250,000+ GPS records using a cluster analysis to predict green-space utilization. • Developed a spatial equity model using ArcGIS that identified critical gaps in park access for underserved communities.	

Department of History and Geography, Georgia College & State University

Geographic Information Science Student

Instructor: Omolola Ologunorisa, PhD

Milledgeville, GA

August 2023 – December 2023

- Optimized bike path routing by applying Morphological Spatial Pattern Analysis to slope, land cover, and traffic data.
- Performed network analysis on OpenStreetMap data to reveal unique routes for commuter safety and connectivity.

PROJECTS

Self-Hosted Compute and Network Infrastructure

Athens, GA

Independent Project

January 2026 – Present

- Built and administer an ansible-managed, KVM-virtualized AlmaLinux slurm cluster, with two GPUs and 13 hosts.
- Secured with FreeIPA identity management, an OPNsense firewall, and a Caddy reverse proxy in a demilitarized zone.

SELECTED PRESENTATIONS

- Kerr, Michael. 2025. "Analyzing Green Space Utilization in Athens, GA Through GPS Data and Spatial Analysis." Oral Presentation at the College of Agricultural and Environmental Sciences Undergraduate Research Symposium, Athens, GA, April 2.

TEACHING & LEADERSHIP EXPERIENCE

Atlanta Area Council, Scouting America

Blairsville, GA

Leave No Trace Level 1 Instructor

November 2021 – November 2025

- Designed and co-taught a two-day, 16+ hour course on outdoor ethics and pedagogy for cohorts of 15–25 adult leaders.

Atlanta Area Council, Scouting America

Covington, GA

Ecology Program Director

May 2017 – January 2023

- Designed a comprehensive curriculum lesson plan and teaching guide for 5+ instructors and 1,000+ annual participants.
- Led Leave No Trace ethics training for 80+ staff, mentoring instructors in evidence-based, experiential teaching methods.

OTHER EXPERIENCE

UGA Carl Vinson Institute of Government

Athens, GA

GIS Student Assistant

February 2024 – May 2024

- Developed and debugged ArcPy script to automate a spatial join for 14,000+ records onto a fragmented road network.
- Eliminated manual errors and cut processing time by >99%, compressing a 6-month project in three weeks.

PROFESSIONAL AFFILIATIONS

American Association of Geographers (AAG), *Student Member*

April 2024 – Present

Southeastern Division of the AAG (SEDAAG), *Student Member*

April 2024 – Present

HONORS & AWARDS

Eagle Scout, *Atlanta Area Council, Scouting America*

December 2020

TECHNICAL SKILLS

- **Programming:** Python (NumPy, Pandas, SciPy), TypeScript, R, Bash, Git, Java, Mathematica, Matlab, Julia
- **Geospatial Analysis:** GIS Modeling (ArcGIS Pro, QGIS), DEM Processing, Network Analysis, MSPA, Geocoding
- **Machine Learning:** TDA (Persistent Homology), Regression (Scikit-learn), Computer Vision (PyTorch)
- **HPC & Data:** Distributed Computing (Dask), GPU Acceleration (CUDA/CuPy), Containerization (Docker/Podman)