Robert Sargent

Curriculum Vitae

College Park, MD, USA
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EDUCATION

University of Maryland, College Park, MD
Bachelor of Science, Mathematics **May 2023**
Minor: Chinese
Relevant Coursework

- Grad courses: Abstract Algebra I and II, Real Analysis I, Lie Groups I, Mathematical Logic I

SKILLS

- Python (NumPy), JavaScript, Godot Engine
- LaTeX typesetting, Image editing (Paint.net, Inkscape), Video editing (Sony Vegas)

PREPRINTS

Minimum-Distortion Continuous Cartograms by Numerically Optimized Meshes **November 2024**
arXiv:2411.17129 | 27 pages | Submitted, pending approval

- Developed a new optimization method for creating cartograms (maps with smooth distortion to highlight population and other data)
- Used JSON data and Python to create and render cartograms

A Gasket Construction of the Koch Snowflake and Variations **April 2024**
Link | 14 pages | Submitted, pending approval

- Described a new construction of the Koch snowflake that gives rise to a continuous family of fractals

TALKS

The Banach–Tarski Paradox *Directed Reading Program, University of Maryland* **May 2023**

- Summarized the proof of the Banach–Tarski paradox

Intro to Geometric Algebra *Directed Reading Program, University of Maryland* **December 2022**

- Described the use of geometric algebra to represent n-dimensional rotations

OTHER RESEARCH

4D Geometry Project **July 2022 – August 2023**

- Used Godot Engine to test implementation of four-dimensional geometry in code
- Learned geometric algebra for representing and manipulating 4D rotations

TEACHING EXPERIENCE

Undergraduate Tutor *Math Dept, University of Maryland* **September 2021 – Present**

- Tutor 2–4 students per day on 100- and 200-level math courses
- Explain difficult fundamental concepts, enabling them to find the answers themselves
- Build some students' understanding over multiple sessions

Grader *Math Dept, University of Maryland* **February 2021 – June 2021**

- Graded assignments for MATH406: Introduction to Number Theory, a class of 30+ students
- Evaluated students' proofs and explained where exactly their logic failed or succeeded
- Employed my knowledge of the course material and proof techniques to pinpoint issues in students' logical arguments