# **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 <a href="mailto:arXiv:2411.17129">arXiv:2411.17129</a> | 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