Drew Steindl

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Education

Vassar College / B.A. Mathematics, GPA: 3.9 – August 2021 – May 2025.

Budapest Semesters of Mathematics / August 2024 – December 2024.

Highschool / UHSSE and Concurrently University of Hartford / August 2017 – June 2021.

Awarded - Highest GPA - Most College Credits - Mathematics Scholar – 4x Robotics Awards.

Papers and Publications

- **Exploring The Landscape of Neural Networks Using Diffusion Geometry** / Ian Adelstein, Smita Krishnaswamy, et al. arXiv:2411.12626. **Submitted to** AISTATS 2025.
- **The distribution of genera of 2-bridge knots** / Moshe Cohen, Abigail Dinardo, Adam M. Lowrance, Steven Raanes, Izabella M. Rivera, Andrew J. Steindl, Ella S. Wanebo. The distribution of genera of 2-bridge knots**. Fundamenta Mathematicae 267 (2024) no. 3, 195-229.**
- **Alpha Zero vs To Knot or not to Knot** / Adam Lowrance, Andrew J. Steindl. ***In progress.***
- **Acknowledged in Paper** / arXiv:2405.08730. Lee Kennedy-Shaffer, Yale Medicine.

Talks

EXPLORING THE LANDSCAPE OF NEURAL NETWORKS USING DIFFUSION GEOMETRY.

- JULY 2024 / JANE STREET MATHEMATICS CONFERENCE (POSTER).

ALPHA ZERO VS TO KNOT OR NOT TO KNOT.

- JULY 2024 / UNKNOT V CONFERENCE.
- APRIL 2024 / HUDSON RIVER MATHEMATICS CONFERENCE.

INTEGRATED VISION, LANGUAGE, AND MOTOR CONTROL IN A HUMANOID ROBOT.

- SEPTEMBER 2023 / VASSAR URSI SYMPOSIUM (POSTER).

THE DISTRIBUTION OF GENERA OF 2-BRIDGE KNOTS.

- APRIL 2023 / HUDSON RIVER MATHEMATICS CONFERENCE.
- SEPTEMBER 2022 / SUNY NEW PALTZ SYMPOSIUM FOR UNDERGRAD MATH RESEARCH.
- SEPTEMBER 2022 / VASSAR URSI SYMPOSIUM (POSTER).

Experiences

Vassar College Mathematics Academic Internship / Spring 2025.

- Host seven office hours per week to assist students with math courses at Vassar.

Summer Undergraduate Mathematics Research at Yale Fellowship / Summer 2024.

- 10 Week Mathematics REU – Research on Geometric Manifold Learning - Produced Paper.

Autonomous Robotics Design Competition at Vassar College / Spring 2023.

- Designed/Built Autonomous Robot to Hunt and Catch a Robotic Turtle as Fast as Possible.

Undergraduate Research Summer Institute at Vassar Fellowship / Summer 2023.

- 10 Week Robotics REU – Researched Humanoid Robotics – Produced a Humanoid Robot.

Supervised Independent Study on Robotic Flapping Flight / Fall 2023.

- Designed/Built Biomimetic Modular Ornithopter to Study the Evolution of Avian Feathers.

Undergraduate Research Summer Institute at Vassar Fellowship / Summer 2022.

- 10 Week Mathematics REU – Research on Knot Theory – Produced Paper.

Awards

2024 - Unknot V Travel Grant - Funding to travel and speak at the Unknot V conference.
2024 - Thompson Bartlett Mathematics Fellowship - Funding to Conduct Math Research.
2023 - Vassar College Film Festival - First Place Best Film.

Activities & Accomplishments

- Hosted and Planned Vassar's First Integration Bee.
  - Organized an extremely successful event where professors and students competed to solve math problems, to humanize faculty and foster community. Will be recurring.
- Founder and President, Vassar's Combat Robotics Club.
  - Established an organization that builds and battles robots. Secured funding and built a safe arena with support from the Cognitive Science Department and Student Association.
- Built the WebApp 'Flow Plane'.
  - Simulates and visualizes 2D dynamical systems from user-defined differential equations and estimates fixed points.
- Founder, Vassar Mathematics Problem Solving Group.
  - Created a club to engage students in weekly math problems posted on a dedicated Vassar website. Weekly meetings for problem-solving and/or student talks.
- Active Part of Vassar's Mathematics Committee.
  - Organize Events – Design Mathematical shirts – etc.
- Treasurer of the American Chemical Society Chapter at Vassar.
- Mass Produced Protective Equipment During Covid from SoCCA Grant. / 2020
  - Turned run down bar into PPE Manufacturing Plant with thirteen 3D printers funded by Southington's SoCCA Grant. Equipment was sanitized and distributed to facilities across Connecticut. Link.

Interests & Skills

Skills	Known Interests
Programming Languages / Java, Python, C++, JavaScript.	Applications of Artificial Intelligence to Mathematical Fields (e.g., Knot Theory).
Mathematics / SnapPy, SageMath, MATLAB, LaTeX.	Autoencoders and Geometric Manifold Learning.
Tools & Platforms / LabVIEW, Git, Docker, MongoDB, NetLogo.	Knot Theory
CAD: / Autodesk Fusion 360, SolidWorks, 3D Printing.	3D printing Mathematics and Visualizations.
Robotics / ROS 2, Micro-ROS, DepthAI, Arduino, WPILib	Robotics
Frameworks & Libraries / Node.js, TensorFlow, PyTorch, OpenCV, React, Svelte.	Collaborative Mathematics, Community Building, and Promoting Inclusion in Mathematics
Instruments / Piano – Trumpet – Strings – Woodwinds	
YouTube Documentation / @drewsteindl @VassarPizzaDaily	