Brantley Vose

Curriculum Vitae

✉ *vose.5@osu.edu*

Education

2020–Present **PhD in Mathematics**, *The Ohio State University*.

2016–2020 **Bachelor of Mathematics and Computer Science**, *Iowa State University*, *3.97 GPA*.

2014–2016 **Associate of Science**, *Indian Hills Community College*, *3.954 GPA*.

Research

Aug 2019 – Present **Harmonic Representatives in Homology over Arbitrary Fields**, *Iowa State University*, With Dr. Michael Catanzaro, Writing a paper examining the existence of a Hodge decomposition and harmonic representatives for finite CW complexes over various fields..

Jan 2018 – May 2019 **Additively Factoring Metrics on Finite Spaces (Undergraduate Thesis)**, *Iowa State University*, With Dr. Kristopher Lee, Studied when a metric on a finite space can be rewritten as a sum of other metrics. Wrote undergraduate thesis based on results and presented to undergraduate committee..

Experience

Aug 2021 – Present **Graduate Teaching Associate**, *The Ohio State University*, Columbus, OH.
- Teach recitation sections for 60 students, supplementing lectures by presenting examples.
- Assist students through feedback, office hours, and tutoring hours.

May 2020 – July 2020 **AI Data Engineering Intern**, *Collins Aerospace*, Cedar Rapids, IA.
- Contributed to team of data engineers.
- Developed and maintain automated Python web scrapers.
- Interfaced with Amazon Web Services.
- Operated and configure Linux Servers on the cloud.

Aug 2018 – Present **Undergraduate Teaching Assistant**, *Iowa State University Mathematics Department*, Ames, IA.
- Mentor and facilitate discussion with small groups of incoming mathematics majors.
- Collaborate with team to maintain 92% retention rate of math majors from their first to second years in college.

June 2019 – Aug 2019 **Cybersecurity Summer Intern**, *Patuxent River Naval Air Base*, Patuxent River, MD.
- Learned all relevant cybersecurity knowledge on the job.
- Created and oversaw training event for 30 Cyber Test and Evaluation branch members and contractors.
- Established and operated network of virtual Linux servers.
- Coached clients and colleagues on cybersecurity tools and concepts.

Aug 2017 – Dec 2017 **Undergraduate Grader**, *Iowa State University Mathematics Department*, Ames, IA.
- Articulated feedback on assignments for roughly 150 students.
- Self-paced to reach weekly deadlines set by supervising professor.

Extracurriculars

Aug 2019 – May 2020 **President of Iowa State Math Club**.
- Organize club meetings for about 20 members.
- Network with and schedule professors to speak at meetings.

Apr 2018 – Apr 2019 **FIRST Lego League Planning Team Volunteer**.
- Helped to orchestrate state-wide competition event with over 100 teams of kids and families.
- Supervised and assisted 50 teams attending state championship event.
- Coordinated day volunteers at state championship as well as multiple regional events.

Presentations

July 2021 **A Tale of Three Metrics: Gromov-Hausdorff, Bottleneck, and Interleaving**, *Facundo Mémoli's Group Meeting*, Ohio State.
Second talk of three as part of a reading course with Dr. Mémoli. Presented and derived stability results relating three metrics useful in persistent homology research.

June 2021 **Three Proofs of Interval Decomposability**, *Facundo Mémoli's Group Meeting*, Ohio State.
First talk of three as part of a reading course with Dr. Mémoli. Compared and contrasted three proofs of interval decomposability of persistence modules.

March 2020 **Detecting Geometric Structure in the Brain with Topology**, *OSU Math 8500, Random Graphs and Cell Complexes*, Ohio State.
Gave 45 minute presentation to class on the paper *Clique Topology Reveals Intrinsic Geometric Structure in Neural Correlations* by Giusti, Pastalkova, Curto, and Itskov.

May 2019 **Undergraduate Thesis Defense**, *Iowa State Undergraduate Committee Meeting*, Iowa State University.
Presented undergraduate thesis results to Iowa State Undergraduate committee.

Apr 2018 **Additively Irreducible Metrics**, *Midwest Undergraduate Mathematics Symposium*, Simpson College.
Gave talk on undergraduate thesis work to audience of 20-30 undergraduates.

Skills

Languages: Python and Java, exposure to C++, C, R, and SQL

Tools and Platforms: Git, Debian Linux, Bash, LaTeX, Arduino, Jupyter Notebook, some Android Studio

Awards

August 2020 Distinguished University Fellowhip from The Ohio State University Graduate School

May 2018 Fred Wright Mathematics Endowed Scholarship

Projects

Arduino Musical Gloves.
Equipped two gloves with Arduino clones, accelerometers and gyroscopes to act as an electronic instrument.

Raspberry Pi Linux Server for File Backups.
Configured Raspberry Pi to act as a Linux server to automatically sync files from laptop across home network.

Dijkstra's Curse, Single Player Game in C/C++.
Built simple randomly generated dungeon crawling game with ASCII graphics, items, and smart enemies.
`https://github.com/prismika/Dijkstra-s-Curse`

Links

Github **`https://github.com/prismika`**