Austin Ulrigg

Curriculum Vitae

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Education

University of Washington September 2023 – June 2026

B.Sc in Mathematics, Departmental Honors *Seattle, WA*

- GPA: 3.83/4.00

Publications / Preprints

A Practical Genus Algorithm Spring 2024–Winter 2025

Independent Research (Joint w/ Alexander Metzger) *Seattle, WA*

- Developed a novel algorithm to compute the orientable genus of graphs in $\mathcal{O}(n(4^m/n)^{n/t})$.
- Successfully determined the exact genus of several graphs that were previously unknown.
- Paper submitted to *Discrete Mathematics* (Nov 2024). arXiv:2411.07347.

Other Research Experience

Undergraduate Honors Thesis Fall 2025

Supervisor: François Clément *University of Washington, Seattle*

- Wrote a comprehensive survey on graph embeddings on surfaces, rotation systems, and genus algorithms (including PAGE).
- Investigated the classification of forbidden toroidal minors and related open problems.
- Full text available: austinulrigg.github.io/thesis

Undergraduate Research in Topological Graph Theory Summer 2025–Present

Advisor: François Clément *Seattle, WA*

- Working on an ongoing project on classifying forbidden minors for the torus, specifically for graphs excluding a K_5 minor.

Washington Experimental Math Lab Researcher September 2024–December 2024

Advisor: Professor Stefan Steinerberger *Seattle, WA*

- Investigated the asymptotic behavior of the dynamical system described in arXiv:2409.08961

Washington Experimental Math Lab Researcher March 2024–June 2024

Advisor: Professor Hadrian Quan *Seattle, WA*

- Collaborated with a team under Dr. Hadrian Quan to investigate wave propagation on graphs, focusing on spectral analysis of the graph Laplacian, graph products, and path homotopy.

Presentations

A Practical Genus Algorithm Nov 2025

Northwest Undergraduate Mathematics Symposium (NUMS) *Bothell, WA*

- Contributed talk based on joint work with Alexander Metzger (presented by co-author).

A Practical Genus Algorithm May 2025

UW Undergraduate Research Symposium *Seattle, WA*

- Presented a new approach to genus computation using an $\mathcal{O}(n(4^m/n)^{n/t})$ algorithm, emphasizing theoretical advancements and impacts on computational fields.

Reading Group Organizer | Topology, Algebra, Linear Algebra, Complex Analysis 2023 – 2025
University of Washington *Seattle, WA*

- Co-organized and led multiple reading groups for 70+ total students, facilitating discussions, grading, and assigning problems.

Honors and Awards

Husky 100 (Nominated by Dept. of Mathematics) *2025*
Math Alliance Predoctoral Scholar Nominee *2024*
Phi Theta Kappa Honor Society (International Honor Society) *2021–Present*
Outstanding Student of the Year Nominee (Centralia College) *2022*
High School Valedictorian (Rank 1/200+, Centralia High School) *2022*
Merit Scholarships Awarded (Total: $12,000) *2022*

Professional Experience

Mathematics Domain Expert (AI Training) Aug 2023 – July 2024; Aug 2025 – Present
Outlier AI / DataAnnotation *Remote*

- Author and edit complex mathematical prompts and solutions to refine Large Language Model (LLM) reasoning capabilities. Develop and apply rubrics to assess model performance and categorize content by difficulty.

Outreach and Service

Teaching Assistant (MATH 209) | *University of Washington* Sep 2024 – Present
- Assist with ODEs/PDEs (heat, wave, etc.); grade assignments, provide one-on-one support.

Mathematics Tutor (CLUE) | *University of Washington* Sep 2024 – Present
- Tutor courses from introductory calculus to abstract algebra.

Math Student Council | *University of Washington* 2024 – Present
- Council Member: Organize study halls and events; act as liaison between students and faculty.

VP & Recruitment Chair | *Theta Delta Chi Fraternity* 2024 – Present
- Elected officer for a 70+ member chapter; oversee recruitment and chapter operations.

Online Mathematics Community | *Volunteer Tutor* Jan 2023 – Present
- Authored 100,000+ posts in a community of 200k+ members, facilitating math discussions.

Mathematics Tutor | *Mathnasium* July 2025 – Sep 2025
- Tutored K–12 students, focusing on foundational skills and confidence building.

Solution Notes: Pearls in Graph Theory | *Independent Project* May 2024 – June 2024
- Authored a 12-page solution set for Hartsfield–Ringel's *Pearls in Graph Theory*. [View Notes]

STEM Tutor | *Centralia College* May 2020 – June 2022
- Tutored Calculus I–III, Statistics, and Human Biology; supported center operations.

Summer Credit Retrieval Assistant | *Centralia High School* Summers 2017 & 2018
- Assisted high school students with recovering mathematics and science credits.

Graduate Coursework

Graph Theory (Math 563), Modern Algebra I-III (Math 504-6), Linear Algebra (Math 582-3).

Other Interests

Hobbies: Intramural Volleyball (especially beach), Hiking, Dogs, Powerlifting, Reading