

Andrew Aguilar

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Education

University Washington, Seattle, WA	<i>Sept 2022 – Current</i>
<i>PhD in Mathematics</i>	<i>Ongoing</i>
<i>M.S. in Mathematics</i>	<i>Fall 2024</i>
◦ GPA: 3.85/4.0	
Cal Poly Pomona, Pomona, CA	<i>Sept 2017 – May 2021</i>
<i>B.S. in Applied Mathematics</i>	
◦ GPA: 3.77/4.0	

Research

Modular Representation Theory	<i>Seattle, WA</i>
<i>PhD Program at The University of Washington</i>	<i>Ongoing</i>
◦ Advisor: Julia Pevtsova (UW)	
◦ Modular Representation Theory, Tensor Triangular Geometry, Finite Tensor Categories in Positive Characteristic	
AI Assurance - Neural Networks and Learning Algebraic Operations	<i>Seattle, WA</i>
<i>Graduate Internship at Pacific Northwest National Lab</i>	<i>Summer 2025</i>
◦ Advisors: Henry Kvinge, Helen Jenne (PNNL)	
◦ Study on neural networks and their ability to learn algebraic properties of groups.	
NSF PUMP-URG program	<i>Pomona, CA</i>
<i>Undergraduate Research</i>	<i>Fall 2020 - Spring 2021</i>
◦ Advisor: Fernando López-García (CPP)	
◦ An application of the discrete weighted Hardy Inequality on trees to the Friedrichs' Inequality on a fractal domain.	
REU at UC Santa Barbara	<i>Virtual</i>
<i>Undergraduate Research</i>	<i>Summer 2020</i>
◦ Advisor: Zhirayr Avetisyan (UCSB)	
◦ Project 1: Topological properties of almost abelian Lie groups, their Lie algebras, subgroups and homogeneous spaces	
◦ Project 2: Properties of the adjoint operator of almost abelian Lie algebras on the space of orbits of systems of linear differential equations	
Math Education	<i>Pomona, CA</i>
<i>Undergraduate Research</i>	<i>Summer 2019</i>
◦ Advisor: Fernando López-García (CPP)	
◦ Developed teaching resources for undergraduate calculus courses to be used in the calculus curriculum at Cal Poly Pomona.	

Publications

Can Neural Networks Learn Small Algebraic Worlds? An Investigation Into the Group-theoretic Structures Learned By Narrow Models Trained To Predict Group Operations	TAGS-DS 2025 - 27
Authors: Henry Kvinge, <u>Andrew Aguilar</u> , Nayda Farnsworth, Grace O'Brien, Sarah McGuire Scullen, Robert Jasper, Helen Jenne	
Using Local Complexity to Evaluate Out-of-Distribution Generalization	TAGS-DS 2025 - 24
Authors: Grace O'Brien, <u>Andrew Aguilar</u> , Robert Jasper, Henry Kvinge, Sarah McGuire Scullen, Helen Jenne	

Teaching

Graduate Teaching Assistant

Seattle, WA

University of Washington

- MATH 125: Integral Calculus *Spring 2026*
- MATH 208: Linear Algebra *Winter 2026*
- MATH 125: Integral Calculus *Spring 2024-Fall 2025*
- MATH 126: Multivariable Calculus *Winter 2024*
- MATH 125: Integral Calculus *Fall 2023*
- MATH 124: Differential Calculus *Fall 2022 - Summer 2023*

Graduate Teaching Associate

Pomona, CA

Cal Poly Pomona

- Instructor of record for introductory math courses.
- Modalities included both in person and virtual.
- MATH 1050: College Algebra *Fall 2021*
- MATH 1060: Trigonometry *Spring 2022*

Tutor and Supplemental Instruction

Walnut, CA + Virtual

Mount San Antonio College

Fall 2018 - May 2022

- Tutor for math, statistics, physics, and chemistry in the ASAC & MARCs tutoring centers.
- Supplemental instructor for math, physics and chemistry.

Upper Division Math Tutor

Virtual

Cal Poly Pomona

Spring 2021

- Tutor in the Cal Poly Pomona LAC for upper division math courses
- Courses include: Intro to Proofs, Abstract Algebra, Real analysis, Graph Theory, Numerical Analysis, Computational Methods (MATLAB), Probability/Statistics and introductory math courses

Conferences and Presentations

Oberwolfach: Tensor-Triangular Geometry and Interactions

October 2025

Attendee

UW Math - StARTS (*Speaker*)

Fall 2025-Spring 2026

The Green Correspondence in Modular Representation Theory
Introduction to Support Theory in Modular Representation Theory
The Derived Category of an Exact Category

Joint Mathematics Meeting - Seattle

Winter 2025

Attendee

Motivic homotopy, K-theory, and Modular Representations

Fall 2024

Attendee

Conference held in honor of Eric Friedlander

UW Math - 123 Seminar (*Speaker*)

Winter 2024

"When do Lie Algebras lie?" (Algebra of Distributions for Affine Group Schemes)

UW Math - Back to school seminar (*Speaker*)

Fall 2024

Étale group schemes and Duality

Cal Poly Pomona RSCA Conference (*Speaker*)

Spring 2021

"An Application of the Weighted Discrete Hardy Inequality on Trees to the Friedrichs Inequality on a Fractal Domain"

CPP Math student colloquium series (*Speaker*)

Fall 2020

"Topological properties of almost abelian Lie groups and homogeneous spaces"

Young Mathematicians Conference (<i>Speaker</i>)	<i>Summer 2020</i>
"Topological properties of almost abelian Lie groups and homogeneous spaces"	
Cal Poly Pomona RSCA conference (<i>Speaker</i>)	<i>Spring 2019</i>
Sophisms and Erroneous Resolutions	

Extracurricular and Outreach

Washington Directed Reading Program Organizing Committee	<i>Winter 2024- Current</i>
◦ Treasurer for the UW WDRP	
Graduate TA training mentor	<i>Fall 2024</i>
◦ TA training mentor for UW Math and Applied MATH graduate students	
Washington Directed Reading Program Mentor	
◦ Directed reading project with undergraduates, as chosen by the graduate student mentor	
◦ Past projects:	
– Intro to higher math through Polyhedra	<i>Winter 2024, 2026</i>
– Representation Theory of Finite Groups	<i>Spring 2024</i>
– Simple Discrete Models in Biology and MATLAB	<i>Spring 2025</i>
– Smooth Groups and Linear Algebra	<i>Spring 2026</i>
University of Washington Math Circle	<i>Fall 2023- Spring 2024</i>
◦ Instructor for the UW middle & high school math circle	
UW Math Hour Olympiad Judge	<i>Spring 2023/2024/2026</i>
◦ Judge for the yearly UW math Hour Olympiad	
Cal Poly Pomona SEES program mentor	<i>2019-2022</i>
◦ Peer mentor for the SEES program	

Honors and Awards

Recipient of the Gloria C. Hewitt Fellowship Award	<i>Fall 2023</i>
BAMM! Scholarship Recipient	<i>2021 - 2022</i>
Recipient of the Mr. and Mrs. Keith Soon Kim Scholarship	<i>Fall 2020</i>
Dean's List & President's List	<i>2018 - 2021</i>

Technologies and Languages

Programs & Languages: $\text{\LaTeX}$, Octave/MATLAB, Python, MAGMA