

Katherine Keegan

6 Patrick Court, Flanders, NJ 07836
katie@katiekeegan.org | 201-572-6968

Education	Bachelor of Science, Honors <i>Mary Baldwin University, Staunton, VA</i> <i>Aug. 2018 - May 2022</i> <ul style="list-style-type: none">● Major: Applied Mathematics; Minors: Physics, Leadership Studies (Community & Social Change emphasis), GPA: 4.00/4.00● Relevant Coursework: Linear Algebra, Math & Programming, Ordinary Differential Equations, Numerical Analysis & Computing, Real Analysis, Complex Analysis, Discrete Mathematical Structures, History of Math, Multivariable Calculus I & II, Statistics I & II● Honor Societies: Sigma Pi Sigma National Physics Honors Society, Omicron Delta Kappa National Leadership Honors Society, Alpha Lambda Delta First Year Honors Society● Began college at age 14 through Program for the Exceptionally Gifted, will graduate at age 18
Research Interests	Scientific computing; linear algebra; numerical methods; machine learning; dimension reduction; imaging; applications in healthcare and space science
Research Experience	Applications of the Singular Value Decomposition <ul style="list-style-type: none">● Summer research project through “Fast Learning Algorithms for Numerical Computation and Data Analysis” program at Institute for Computational and Experimental Research in Mathematics (ICERM) located at Brown University; mentor: Dr. Minah Oh● Applied principal component analysis (PCA) to COVID-19 dataset, analyzing trends among states and creating 3-D interactive visualizations of principal components to illustrate results● Assisted with development of modified SVD-based watermarking scheme and constructed plots to illustrate improved efficiency and extraction accuracy of scheme in images, video, and audio Modeling and Solving Aircraft Response to Elevator Deflection <i>Fall 2020</i> <ul style="list-style-type: none">● Completed as course paper for final project in Ordinary Differential Equations● Modeled elevator deflection on Boeing-747 under cruise flight conditions using MATLAB Simulink Aerospace Blockset and mathematically illustrated the perturbation’s effect on system Applications of Hilbert Spaces <i>Spring 2020</i> <ul style="list-style-type: none">● Completed as course paper for honors project in Linear Algebra● Explored mathematical properties of Hilbert spaces and their scientific applications
Presentations	“SVD and its Applications.” Shenandoah Undergraduate Mathematics and Statistics conference, James Madison University, December 2020.
Work Experience	Tutor <i>Mary Baldwin University, Staunton, VA</i> <i>Jan. 2020 - Present</i> <ul style="list-style-type: none">● Providing individual instruction and guidance with Physics, Japanese, and Mathematics courses Teaching Assistant <i>Mary Baldwin University, Staunton, VA</i> <i>Sep. 2019 - Dec. 2020</i> <ul style="list-style-type: none">● Assisted with teaching and grading of Precalculus in Fall 2019 and Calculus I in Fall 2020

Extracurricular Activities	Student Pilot	<i>Sep. 2019 - Present</i>
	<i>Blue Ridge Aviation, Weyers Cave, VA</i>	
	<ul style="list-style-type: none"> With funding provided from Mary Baldwin University's Experiential Learning Grant, began flying lessons with goal of obtaining a private pilot certificate 	
	Math Club President	<i>Sep. 2019 - Present</i>
	<i>Mary Baldwin University, Staunton, VA</i>	
	<ul style="list-style-type: none"> Managing club communication; working on expanding scope of club to assist those struggling in math classes across the campus community; held secretary position from 2019-2021 	
	Baldwin Honors Scholars President	<i>Sep. 2020 - Present</i>
	<i>Mary Baldwin University, Staunton, VA</i>	
	<ul style="list-style-type: none"> Working with other student leaders with coordination of activities for students in the honors program at Mary Baldwin University; held vice president position from 2020-2021 	
	Virginia Women's Institute for Leadership	<i>Jan. 2020 - Present</i>
	<i>Mary Baldwin University, Staunton, VA</i>	
	<ul style="list-style-type: none"> Member of the only all-female corps of cadets in thenation, a university program led by military staff preparing women for leadership positions in both military and civilian careers In 2020-2021, held second-cadet-in-command position as the Executive Officer, responsible for the coordination of specialized staffs to support the education of ~100 cadets Anticipating completion of the VWIL Advanced Leadership Certificate in May 2022 	
Selected Honors & Awards	<ul style="list-style-type: none"> Advisory Board of Visitors Capstone Fellowship (funding for senior projects based on research proposal application) at Mary Baldwin University (2021) Craig Hanson '74 Memorial Scholarship (given to a rising VWIL junior demonstrating high academics and respect of peers) (2020) First Year Calculus Award (given to freshman with highest average in Calculus I & II) (2019) Mary Baldwin University Experiential Learning Grant (2018) Mary Baldwin University President's Scholarship (2018) 	