

Hope Neveux

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Education

Marist College | 2018 - 2022

Advisors: Dr. Matthew Glomski, Dr. James Helmreich

- *Summa Cum Laude* B.S in Applied Mathematics, Data Science & Analytics
- Double Concentration in Computer Science and Actuarial Science
- Overall GPA: 3.918 / 4.0

Harvard University | 2022 - 2024

Advisor: Dr. Weiwei Pan

- S.M in Data Science
- Overall GPA: 3.89 / 4.0

Research Experience

Mental Health & Wearable Technology | Harvard University Nock Lab

Advisors: Dr. Kelly Zuromski, Dr. Kate Bently, Dr. Adam Bear, Dr. Yaniv Yacoby, Dr. Weiwei Pan

Cambridge, MA
Sep 2023 - Present

- Utilizing bioinformation from wearables to understand and predict suicidal behavior before it occurs to hasten intervention and obviate need for invasive Ecologically Momentary Assessments
- Process raw accelerometer data to infer physical activity and sleep cycles for multi-month, multi-patient information and model suicide urge and intent using mixed effects and general time-series approaches

Responsible AI | Google Research

Advisor: Dr. Femi Olanubi

Remote
Jun 2023 - Present

- Researching and developing equitable human representation in computer vision technology systems with support of an interdisciplinary doctoral team
- Reviewed existing literature and conducted in-depth interviews and focus groups with experts to develop a taxonomy and measurement framework to more accurately capture nuances of human perception
- Quantitatively assessed multiple crowdsourcing annotation strategies, weighing known pitfalls of social perceptions, to determine the best method to scale human annotation globally

Adaptive Infection Simulator | Marist College Department of Computer Science

Advisor: Dr. Alan Labouseur

Poughkeepsie, NY
Apr 2021 - Apr 2022

- Analyzed a simulated representation of pooled testing methods for epidemiological tracking, balancing minimization of false negatives and test usage through Bayesian methods given user-defined population, disease prevalence, testing sensitivity and specificity, number of stages, and starting pool size
- Comparing results to data from testing protocols performed by the university during the 2020-2021 academic year, uncovering flaws in real detection and estimating likely false negatives

Markov (Chains & Abstract Strategy) Games | PolyMath Jr.

Advisor: Dr. Johanna Franklin

Remote
Jun 2021 - Aug 2021

- Expanded upon sparse literature covering traditional games Tapatan and Picaria through strategic analysis and design via abstract algebra, learning algorithms, combinatorics, and markov chain monte carlo methods
- Proved and built guaranteed win strategy for Tapatan, disproved extant guaranteed win strategy for Picaria, and expanded games to new abstractions
- Independently manage personal work related to specific sub-team goals in overall project goals, participated in regular meetings involving cross-team work, planning, paper editing, presentation preparation, experimentation, and focus-groups

Publications

Analyses of Tapatan and Picaria | PolyMath Jr.

Advisor: Dr. Johanna Franklin

In Preparation

Analyses of Tapatan and Picaria, A. G. Adams, L. P. Arceneaux, H. Benham, A. Bhartari; M. Cruz-Larios, Q. Dong, L. F. Estrada, J. Franklin, A. Gangal, Z. J. Hercher, K. J. Martindale, **H. G. Neveux**, Y. Qiu, X. Shi, M. S. Sun, M. W. Sunseri, H. Tiwari, H. Verma, W. Wang, E. Worrell, and J. Wu

Invited & Given Talks

Higher Education's Response to COVID-19 Explorations in Social Justice Conference Invited Panelist	Sep 2022
Covid on Campus: Simulating the Testing & Testing the Simulation New York Celebration of Women in Computing ✉ Talk by Dr. Alan Labouseur, Hope Neveux	Apr 2022
<ul style="list-style-type: none"> · Talk covering the goals, design choices, results, and implications of the simulation vs real results of the Marist College COVID monitoring protocol during the 2020 - 2021 academic cycle 	
Analyses of Tapatan and Picaria Marist College REU Panel ✉ Talk by Hope Neveux	Mar 2022
Nebraska Conference for Undergraduate Women in Mathematics ✉ Poster Session by Hope Neveux, Jingyi Wu	Feb 2022
PolyMath Jr. Conference ✉ Talk by Luke Arceneaux, Luisa Estrada, Hope Neveux	Aug 2021
<ul style="list-style-type: none"> · Condensed presentation on general definitions, win rates, optimal strategies, board symmetries and generalizations, and game variations for research completed during the duration of the official PolyMath Jr. program in Markov (Chains & Abstract Strategy) Games 	

Professional Experience

Graduate Student Researcher: Responsible AI Google Research	Remote Jun 2023 - Present
3D Printing Core Specialist Harvard University Science Operations	Cambridge, MA Sep 2022 - May 2024
<ul style="list-style-type: none"> · Support the School of Engineering and Applied Science in the fabrication of custom, high-quality PhD and PI research parts in-house for Harvard labs and affiliates for uses such as device encasements, brain scan models, microfluidics, and biodesign 	
40 Sales Associate Paperstore LLC <i>Original Title:</i> Sales Associate, Promoted Sep 2017	Concord, NH Oct 2016 - Jan 2020
<ul style="list-style-type: none"> · Floor associate responsible for building, maintaining, and promoting a brand section alongside store maintenance tasks · On-boarded and trained seasonal employees, selectively responsible for performing returns, periodically managed floor section assignments and customer engagement, ran register assignments, performed restocks, frequently scheduled for closing 	

Teaching Experience

Graduate Teaching Fellow Harvard University	Cambridge, MA Jan 2024 - May 2024
<ul style="list-style-type: none"> · Project mentor advising a team of students on the pursuit of making an impact in the problem space proposed by an industry partner through Harvard's Computational Science Capstone course. · Ensuring the alignment of the partner's goals with student progress and enriching student professional development. 	
Section Mentor Veritas AI	Remote Mar 2023 - Present
<ul style="list-style-type: none"> · Assisted teaching 3 cohorts of approximately 30 highschool students topics of python from basic data science methods to SOTA models and computer vision · Compiled supplementary material based on the backgrounds of the students to facilitate the use and learning of critical modeling tools and techniques · Advised a course project for a subgroup of the cohort from scratch to presentation of real-life problems 	
Head Mathematics Tutor Marist College Department of Mathematics <i>Original Title:</i> Mathematics Tutor, Promoted in Jul 2021	Poughkeepsie, NY Sep 2020 - May 2022
<ul style="list-style-type: none"> · Re-taught lectures material, reviewed and corrected quizzes and exams, assisted with homework, and worked through examples pertaining to course and instructor style for all 10 foundational courses, 1 upper-level elective, and 2 upper-level special topics · Handled visitation tracking, tutor scheduling and coverage, took on all large groups, and stepped in when requested by other tutors 	

Projects

Human Malaria Detection Harvard University, Data Science II	Spring 2023
<ul style="list-style-type: none"> · Presentation by Hope Neveux, Michael Sam, Abigail Kinaro, Kimberly Lljajurna, Emilia Mazzolenis · Investigating fine-tuned SOTA models and few-layer convolutional networks for computer-vision-based malaria detection coupled with custom hue and saturation alterations 	
Cosmological Effects on Seismic Plate Shifting Harvard University, Data Science I	Fall 2022
<ul style="list-style-type: none"> · Paper and Presentation by Hope Neveux, Audrey Watkins, Haoran Zhang · Implemented bagged regressions, standardized ridges, boosted trees, and time series models to predict earthquake magnitude and prevalence with traditionally available data and web-scraped tidal data 	
bAD Package Harvard University, Systems Development for Computational Science	Fall 2022
<ul style="list-style-type: none"> · Package and Presentation by Hope Neveux, Dahnee Kim, Jack Sheehan, Annabel Yim · Developed a forward and reverse auto-differentiation Python API from scratch including test suite, documentation, and a flexible interface. Published on the Python Package Test Index 	
Dolly Parton Harvard University, Data Visualization	Fall 2022
<ul style="list-style-type: none"> · Website and GitHub by Hope Neveux, Isidora Diaz, Lorelee Ryan · Storybook-like bibliographic website featuring the life, career, and philanthropy of Dolly Parton, developed entirely in HTML, CSS, JS, and Bootstrap 	
Twin Primes & The Twin Prime Conjecture Marist College, Mathematics Capstone	Spring 2022
<ul style="list-style-type: none"> · Paper and Presentation by Hope Neveux, Reece Bartolini, Emily Mohre · A chronological account of the progress addressing the mathematical concept of twin primes and the elusive Twin Prime Conjecture, from 1826 to 2014, written as a textbook chapter and presented as a full lecture 	
Investigating Interstellar Light Marist College, Machine Learning	Fall 2021
<ul style="list-style-type: none"> · Paper and Presentation by Hope Neveux, Kaden Beck · Paper investigating the feasibility of machine learning for detecting pulsars from neutron candidates characterized by statistics on the integrated pulsar profile, relation in the amount of signal smearing, and general interference based on data used in R. J. Lyon's <i>Why Are Pulsars Hard to Find</i> 	
Heat Conduction in an Insulated Steel Rod: Numerical Marist College, Partial Differential Equations	Spring 2021
<ul style="list-style-type: none"> · Paper by Hope Neveux, Jake Zukaitis · Exploratory project to modify basic heat conductance PDEs to better match real life measurements of heat diffusion under a specific circumstance 	
Evolution of Music Over Four Modern Decades Marist College, Data Mining & Predictive Analytics	Spring 2021
<ul style="list-style-type: none"> · Paper and Presentation by Hope Neveux, Emily Mohre, Amanda Poor · Employing feature selection, engineering, and appropriate architectures to create popular song profiles by identify prominent musical attributes associated with chart performance from 1980 - 2020 by decade 	
Anthropogenic Effects on Stream pH Marist College, Bayesian Analysis	Fall 2020
<ul style="list-style-type: none"> · Paper by Hope Neveux, Camille Renaud · Paper investigating conclusion differences of Bayesian vs frequentist analyses of local water quality study examining anthropogenic effects on fluvial systems 	

Awards & Recognition

Pi Mu Epsilon Marist College	Since Mar 2022
<ul style="list-style-type: none"> · Nomination by multiple faculty given excellence in foundational and advanced mathematics in pursuit of a major with maintained GPA of at least 3.0 · Inducted to the U.S. Honorary National Mathematics Society in 2022 in a cohort of 8 students out of a department of approximately 75 	
Alpha Chi Marist College	Since Feb 2022
<ul style="list-style-type: none"> · Elected for induction by faculty due to depth of academic pursuit and placement in the top 10 percent of juniors, seniors, and graduate students 	

2nd Place

- Competed on a 3 person team against approximately 10 others to analyze pandemic communications, presenting the divergence of mental health availability and searches / posts related to depression and anxiety
- Proposed recommendation to bolster telehealth and remote support services, which were then underutilized and inaccessible

Dr. Armand Hammer Scholarship | Marist College

Feb 2019 - May 2022

5-time Recipient

- Merit scholarship awarded annually to a single student of the college for demonstrated academic excellence and the potential to become an outstanding graduate

Dean's List | Marist College

Aug 2018 - May 2022

8-time Recipient

- Awarded every semester to students demonstrating academic excellence in the previous term, requiring a semester GPA of 3.60 and greater for a 12-credit or greater workload

Academic Merit Scholarship | Marist College

Aug 2018 - May 2022

Leadership & Outreach

Graduate Student Mentor | Harvard University

Oct 2023 - May 2024

- Mentor on academics, professional trajectory, and general support among 1st years within the professional graduate programs through the Graduate Advisory Committee's mentorship program
- Foster connection and belonging overall and 1-on-1 meetings at least monthly with two mentees alongside regular online communication offering emotional and academic support

Graduate Advisory Committee Webmaster & Communications Manager | Harvard University

Aug 2023 - May 2024

- Responsible for the design, maintenance, and distribution of the Harvard SEAS GAC website communicating our events, mission, and resources as well as monitoring student and alumni inquiries

Association for Women in Mathematics Secretary | Marist College

Aug 2021 - May 2022

Advisors: Dr. Matthew Glomski, Dr. Elizabeth Reid

- Initiated correspondence for collaboration with clubs and external organizations, wrote and managed meeting notes and agendas, assisted in any capacity on all projects

Math Club President | Marist College

Aug 2021 - May 2022

Advisor: Dr. Matthew Glomski

- Corresponded with other clubs and the Department of Mathematics faculty to plan events fostering larger community, mathematics education and excitement, present research, and provide resources to succeed in academia and industry

Math Club Social Media Director | Marist College

Aug 2020 - May 2021

Advisor: Dr. Matthew Glomski

- Curate official Instagram content alongside the design and maintenance of the first official website

Skills & Interests

Programming & Programs

- Python and major libraries *Numpy*, *Pandas*, *Dask*, *Scipy*, *Jax*, *BeautifulSoup*, *Sci-kit Learn*, *Tensorflow*, *Pytorch*, *Matplotlib*, *Seaborn*
- JavaScript, HTML + CSS, React, and plugins *Bootstrap*, *D3*
- R and major libraries *ggplot2*, *dplyr*
- Java, \LaTeX , bash, SQL, Version Control (git)
- GCP, Docker, RStudio, VSCode, Jupyter, Google Colab, GitHub, Tableau, Windows OS, Mac OS, Ubuntu Linux, SPSS Modeler

Interests

- Weightlifting, running, and martial arts; all things sci-fi; skincare; learning new recipes; exploring new music genres; reading fiction
- Cosmology and physics; data privacy; fairness, equity, and accessibility; precision medicine; risk modeling; prosthetics; 3D printing