

Vanessa Sun

CONTACT INFORMATION

vanessa.sun138@gmail.com

EDUCATION

Massachusetts Institute of Technology

Advanced Study Program (Continuing Education), Sept. - Dec. 2021
Took Experimental Atmospheric Chemistry graduate class

Macaulay Honors College at Hunter College, City University of New York

B.A. in Mathematics (with Honors) and Studio Art, Aug. 2016 - Jun. 2021
Minors in Political Science, Media Studies
GPA: 3.81

RESEARCH EXPERIENCE

Massachusetts Institute of Technology

Feb. 2022 - Present

Research Assistant - MIT Stable Isotope Laboratory

- PI: Shuhei Ono
- Working on a carbon dioxide sequestration project

Massachusetts Institute of Technology Lincoln Laboratory

Student Technical Assistant - Air Traffic Control Sept. 2021 - Present

- Working on a project involving the formation and detection of airplane contrails
- Using High-Resolution Rapid Refresh (HRRR) data sets for data collection on atmospheric conditions to predict contrail formation

Lawrence Livermore National Laboratory

Jun. - Aug. 2021

Graduate Computing Scholar Intern

- Trained a Gaussian Process model to predict voltage levels of power grids
- The model is less computationally expensive than the state-of-the-art power grid simulator in predicting power failures and improves energy infrastructure resiliency
- Presented results to lab researchers in a technical talk

Youngstown State University/Environmental Collaborative Jan. - May 2021

Student Project Member

- Created mathematical model and interactive map to determine optimal locations to place gaming cameras to track boaters along the Mahoning River
- Led team collection of all datasets to solve the problem, including information on boater demographics, river dam fatalities, nearby town populations, and river landmark locations
- Managed our team of 3 and discussed progress with the client at Environmental Collaborative weekly

Mathematical Sciences Research Institute

Jun. - Jul. 2020

Undergraduate Student Researcher

- Participated in the Mathematical Sciences Research Institute-Undergraduate Program 2020 REU program, which included problem sessions, lectures, and research projects
- Worked on a team studying automorphism and monodromy groups of modular curves

- Created a poster for conferences, wrote a paper, and presented findings to an audience of both non-mathematicians and mathematicians

EMPLOYMENT &
PROFESSIONAL
EXPERIENCE

**Arizona State University / National Aeronautics and Space Administration
Lucy Student Pipeline Accelerator and Competency Enabler Academy**

NASA Proposal Writing and Evaluation Experience Student May - Jul. 2021

- Managed team of nine students to develop a \$10,000 concept proposal addressing the needs of NASA's Human Research Program to improve the health and safety of human space travel
- We proposed a new imaging system to improve astronaut brain monitoring
- Project placed in the top 6 proposals in the program, among 300+ students
- My role was the Deputy Manager, where I was responsible for team meeting scheduling, calculating the budget for our proposal, and ensuring the project stayed along the intended timeline.

New York Math Circle Sept. - Dec. 2020

Teaching Assistant

- Advised and encouraged student progress in problem sessions
- Gave feedback and guidance to facilitate understanding and differing perspectives on problem solving methods
- Led homework review sessions including presentations of solutions
- Organized class materials for Google Classroom for 30+ middle school students

Marshall Chess Club Sept. 2017 - Feb. 2019

Assistant Manager/Tournament Director, Blog Writer

- Created tournament game match-ups using pairing software
- Supervised gameplay and resolved disputes between tournament players
- Managed tournament registration, financial spreadsheets, and wrote emails on club incidents for Board members
- Wrote occasional blog posts for the chess club

Freelance Chess Journalist/Photographer Nov. 2016 - Dec. 2018

- Wrote articles and managed US Chess social media accounts at numerous chess tournaments
- Events covered include the 2016 World Chess Championship, 2017 U.S. Chess Championship, 2017 U.S. Open, and many scholastic events
- [Awarded "Best of US Chess 2018 #10" award](#) for top 10 articles written for US Chess in 2018

PRESENTATIONS
AND TALKS

Peer Mentoring and Career-Building Support for Marginalized STEM Undergraduates, 11th Annual oSTEM Conference (Oct. 30, 2021) - Virtual, Contributed Workshop

Using Gaussian Process Approximation Surrogate Modeling to Protect Power Grids, Lawrence Livermore National Laboratory Intern Project Presentations (Aug. 19, 2021) - Virtual, Final Presentation to Lab Employees & Researchers

Strength in Community: How helping other math students succeed became an integral part of my STEM journey, Lawrence Livermore National Laboratory Cybersecurity Summer Institute Intern Presentations (Jul. 29, 2021) - Virtual, Contributed Talk

Effect of higher-level independent generator outages in composite-system adequacy evaluation, Lawrence Livermore National Laboratory Squirrel Contingency Analysis Reading Group (Jul. 21, 2021) - Virtual, Expository Talk to Research Group

Boating on the Mahoning River, Youngstown State University Math Modeling Final Project Presentations (Apr. 27, 2021) - Virtual, Final Presentation to Company Sponsor

Student-Led Academic Community Organizing: What's Missing and How to Build It, Rose-Hulman Undergraduate Math Conference (Apr. 24, 2021) - Virtual, Contributed Talk

Student-Led Academic Community Organizing: What's Missing and How to Build It, University of Guam STEM Conference (Apr. 15, 2021) - Virtual, Invited Talk

Calculating Monodromy Groups for Modular Curves, MAA Undergraduate Student Poster Session at the Joint Mathematics Meetings (Jan. 6, 2021) - Virtual, Contributed Poster

Career-Building Resources for Students in the Mathematical Sciences, Online Undergraduate Resource Fair for the Academic Advancement of Marginalized Mathematicians (Dec. 19, 2020) - Virtual

Monodromy Groups for Classical Modular Curves, 2020 SACNAS - The National Diversity in STEM Conference (Oct. 20, 2020) - Virtual, Contributed Poster

Monodromy Groups of Modular Curves, National Association of Mathematicians' Undergraduate MATHFest (Oct. 10, 2020) - Virtual, Contributed Poster

[Automorphism Groups and Monodromy of Classical Modular Curves](#), Mathematical Sciences Research Institute-Undergraduate Program 2020 Final Presentations (Jul. 25, 2020) - Virtual, Final Presentation for General Public & Researchers

[Misinterpretations and Meanings of the Apple, Carnation, and Dandelion and Their Portrayals in Our Culture](#), New York Botanical Garden Humanities Institute Junior Mellon Fellow Research Presentations (Aug. 17, 2018) - Final Presentation and Exhibition for General Public

FELLOWSHIPS AND FUNDING

The National GEM Consortium, GEM Fellowship MS or PhD Engineering and Science Fellowship Employer Fellow, Pending for May 2022

- Contingent on me accepting my Summer 2022 internship offer at the National Renewable Energy Laboratory and receiving a graduate program acceptance
- \$16,000 granted for the first year of a graduate program

Online Undergraduate Resource Fair for the Advancement and Alliance of Marginalized Mathematicians, Conference Organizer and Budget Committee Member, Dec. 2021

- Wrote budget proposals for conference funding for speaker honoraria, organizer stipends, survey incentives, and fees from various universities and professional mathematics organizations
- Received \$16,557.65 total from the Massachusetts Institute of Technology, Mount Holyoke College, Rutgers University, Rose-Hulman Institute of Technology, the Society for Industrial and Applied Mathematics, Art of Problem Solving, the

American Mathematical Society

- Currently applying for National Science Foundation grant funding for future years

New York Botanical Garden, Andrew W. Mellon Junior Humanities Fellow,
Jun. - Aug. 2018

- Wrote proposal and developed original project analyzing history of how society views the apple, carnation, and dandelion plants
- Used library collections to curate LuEsther Mertz Library exhibit on artwork and literature relevant to the research topic
- [Presented results and exhibit to general public at a research seminar](#)

HONORS AND AWARDS

Registration Scholarship for 2021 SACNAS National Diversity in STEM Conference, Oct. 2021

Lawrence Livermore National Laboratory Computing Group DEI Spotlight, Jun. 2021
Lander Hughes Prize (\$800), Hunter College Department of Mathematics and Statistics, Jun. 2021

University Macaulay Scholar (Full tuition scholarship), Macaulay Honors College, Aug. 2016 - Jun. 2021

Registration Scholarship for 2020 SACNAS Conference, Oct. 2020

[Association for Women in Mathematics/Math for America Student Essay Contest Honorable Mention](#), Mar. 2020

Dean's List, Fall 2016 - Spring 2018, Fall 2019, Spring 2021

[HackMIT Top Ten Overall Projects and Assistive Tech Track Winner](#), Sept. 2019

CUNY Math Challenge Participant and Final Round Contestant, Apr. 2018

WRITING AND PUBLICATIONS

The Online Undergraduate Resource Fair for the Advancement in Academia of Marginalized Mathematicians, with Alvaro Carbonero, Brittany Gelb, Amaury Miniño, Lee Trent, Pamela E. Harris, Aris Winger. [Practices & Policies: Advocating for Students of Color in Mathematics \(Book\)](#). August 2021.

[Student-Led Academic Community Organizing](#), with Alvaro Carbonero, Brittany Gelb, Amaury Miniño, Lee Trent. Mathematical Association of America Math Values Blog. June 10, 2021.

[Advice for Applying to REU Programs \(From Recent Participants!\)](#), with Alvaro Carbonero, Brittany Gelb, Amaury Miniño, Lee Trent. e-Mentoring Network in the Mathematical Sciences - connecting students and mentors. AMS Blogs. January 20, 2021.

CONFERENCES AND EVENTS LEADERSHIP

GeoLatinas Aug. 2021 - Present
GeoSeminars by GeoLatinas Seminar Organizer

- Leader, host, and moderator of seminars in English (starting January 2022)
- Co-organizer for seminars in Spanish (Fall 2021)
- Invite, select, and communicate with speakers
- Edit content and design of flyers

Online Undergraduate Resource Fair for the Advancement and Alliance of Marginalized Mathematicians (OURFA²M²) Oct. 2020 - Present
Organizer

- [An online resource fair for mathematics undergraduate students from marginalized backgrounds interested in academia-focused or research careers](#)

- Select and invite speakers, including students, professors, professional mathematicians, and REU mentors, for various talks about research, undergraduate experiences, and resources to find research opportunities
- Had over 200 participants in both the first and second year
- Currently on Budget Committee to organize conference funding and Speaker Committee to select speakers and maintain overall communications
- Previously called the Online Undergraduate Resource Fair for the Advancement in Academia of Marginalized Mathematicians

Mathematical Sciences Research Institute Jul. 2021
 Mathematical Sciences Research Institute-Undergraduate Program 2021 Beamer
 Presentation and Poster Presentation Workshops - Invited

- Co-led 2 workshops for REU students on the basics of creating Beamer presentations in \LaTeX and conference posters
- Created \LaTeX poster templates and Beamer presentation template in preparation for the workshops
- Topics covered include: selecting poster themes, various methods to create a poster with \LaTeX , resources for poster examples, tips based on my personal experiences making posters, Beamer theme options, and creating slide pauses, citations, columns, and references

\LaTeX Workshop for Undergraduate Mathematics Students Jun. 2021
 Organizer & Curriculum Developer

- Developed curriculum on \LaTeX for mathematics students, especially those participating in research programs, and included basic commands, formatting, and typesetting mathematics
- Co-lead virtual workshop and moderated Zoom discussions and questions
- Gained international attention and had over 150 participants
- This workshop was part of my work with the Online Undergraduate Resource Fair for the Advancement and Alliance of Marginalized Mathematicians

CUNY Research Scholars Program Oct. 2020 - Jan. 2021
 REU Experiences Webinar Organizer

- Organized and spoke on a webinar panel to encourage students to apply for Research Experiences for Undergraduates (REU) programs for a variety of STEM disciplines
- The CUNY Research Scholars Program is a research program for associate degree students to engage in research with faculty members at the CUNY community colleges

OUTREACH AND
 COMMUNITY
 INVOLVEMENT

HackMIT 2021 Sept. 2021
 Volunteer Judge

- Interviewed participants on their hackathon projects, asked questions, and ranked projects

Letters to a Pre-Scientist Sept. 2020 - June 2021
 Volunteer

- Wrote letters to middle school low income youth to encourage them to pursue a career in STEM

- The training involved reading articles and discussing topics such as scientific identity and issues in STEM education for youth.

Greenlight Climate Festival Mar. 2021
Volunteer

- Promoted the festival on several Hunter College social media networks and to the Geography Department at Hunter College to increase registration for the event

Math for All in NOLA Mar. 2021
Volunteer

- Introduced a plenary speaker and moderated the Q&A session
- Hosted the undergraduate game night

Association for Women in Mathematics Sept. 2020
Reviewer Volunteer

- Reviewed essays for the Association for Women in Mathematics: The First Fifty Years AWM-Springer book

Out in STEM (oSTEM), Hunter College Chapter Sept. 2019 - May 2020
Secretary

- Took minutes for general meetings and planned club events
- I was part of the founding executive board for the Hunter College Out in STEM chapter

National Museum of Mathematics Nov. 2019 - Mar. 2020
Volunteer

- Welcomed and directed visitors to evening programs at the museum
- Provided administrative and technical assistance to staff at events such as lectures, exhibit openings, and game nights

PROFESSIONAL
AFFILIATIONS

American Meteorological Society, Student Member, Dec. 2021 - Present

Phi Beta Kappa, Member, Apr. 2021 - Present

Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS), Member, Oct. 2020 - Present

The National Alliance for Doctoral Studies in the Mathematical Sciences (Math Alliance), Predoctoral Alliance Scholar, Jan. 2020 - Present