SPIROS MANOLAS

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SUMMARY

Senior Standing Applied Mathematics and Statistics student with research and teamwork experience and interests in the computational sciences seeking research/internship opportunities.

EDUCATION

B.S., Applied Mathematics and Statistics; Mathematics Graduating May 2027
Stony Brook University, Stony Brook, NY 3.91 GPA
College of Engineering and Applied Sciences,
Relevant coursework: Quantum Computing and Applications, Numerical Analysis, Applied Real Analysis, Computing and Programming Fundamentals in Applied Mathematics and Statistics, Probability Theory, Engineering Graphics and CAD, Research in Applied Mathematics, Applied Calculus IV Differential Equations, Survey of Probability and Statistics, Finite Mathematical Structures, Applied Calculus III, Applied Linear Algebra, Classical Physics I and II

SCHOLARSHIPS/AWARDS

Stony Brook Academic Achievement Award	2025
SIAM Student Travel Award to CSE25 Conference	2025
Tau Beta Pi Engineering Honor Society	Fall 2024 - Present
Dean's List	Fall 2023 - Present
Full Scholarship: Simons STEM Scholars Program	2023-2027
Stony Brook University Presidential Scholarship	2023-2027
New York State Scholarship for Academic Excellence	2023-2027

RESEARCH EXPERIENCE

Los Alamost National Laboratory Computational Physics Workshop Jun 2025 - Aug 2025
Mentors: Nathan Vaughn-Kukura & Misha Shashkov

- *Project: Algorithm Development for Arbitrary Lagrangian Eulerian Contact and Sliding in Hydrodynamics Simulations*

Mechanical Engineering Undergraduate Research Assistant Sep 2024 - Present
Mentor: Dr. Shikui Chen, Department of Mechanical Engineering
CMADO (Computational Modeling Analysis and Design Optimization) Research Laboratory

- *Designing a Bistable Device for the Deployment of Brain Aneurysm Devices*
  Develop a novel approach that combines topology optimization with conformal geometry theory to achieve optimized deployable bistable devices for brain aneurysms.

Research Abroad experience, Turkana Basin Institute, Kenya Jan 2025
Mentors: Dr. Dino Martin, Dr. Gregory Henkes, Dr. Marin Frouin, Dr. Gabrielle Russo

- As one of 16 students, I collaborated with a diverse team of scientists during a 3-week immersive research experience in Kenya. I conducted fieldwork in Nairobi, Naivasha, and Turkana on projects addressing climate change, paleontology, and sustainability.
- Conducted data collection and analysis at key sites, including Lake Turkana, Lothagam, and Central Island, contributing to research on the Turkana Genome Project and historical water level fluctuations.
- Developed a deeper understanding of the scientific process, sustainability efforts, and the importance of interdisciplinary research in addressing global challenges.

Applied Mathematics Undergraduate Research Assistant Jan 2024 - Dec 2025
Mentor: Dr. Hyun-Kyung Lim, Department of Applied Mathematics and Statistics

- *Quantum Computing project* Aug 2024 - Dec 2024
  Investigate quantum error mitigation for the Quantum Approximate Optimization Algorithm (QAOA). Through QAOA, we seek to demonstrate quantum computational advantages in combinatorial optimization problems using NISQ computers.

- *Quantitative Finance Project* Jan 2024 - May 2024
  Explored the usage of linear programming, openMP, and MPI for applications in optimization problems in quantitative finance, specifically for those relating to FARIMA-FIGARCH models.

Emory University Computational Mathematics for Data Science REU Participant Jun 2024 - Jul 2024
Project: Optimal Experiment Design and Image Reconstruction using Generative Methods
Mentor: Dr. Nicole Yang, Department of Mathematics

- *Optimal Experiment Design and Image Reconstruction using Generative Methods*
  Using generative methods, particularly a a conditional continuous normalizing flow, we investigated a potential solution to ill-posed inverse problems, with a focus on applications for medical imaging. A proof-of concept for our model was able to outperform the Fast-Iterative-Shrinking-Threshold-Algorithm, a baseline solution for ill-posed inverse problems.

SPECIAL PROJECTS

Predator Prey Modeling Fall 2024
AMS 325 Computing and Programming Fundementals in Applied Mathematics, Dr. Ryan Kaufman

- Using the Classical Runge-Kutta method, we performed numerical simulations of various Predator-Prey relationships.

PRESENTATIONS

- **Manolas, S.**, Sadasivan, C., Gu, D., Shikui, C. (2025, May) Designing Bistable Brain Aneurysm Implants Via an Integrated Non-Linear Topology Optimization and Conformal Geometry Approach. Poster presented at the Stony Brook University Celebration of Undergraduate Research & Creativity, Stony Brook, NY.
- **Manolas, S.**, Mitagar, A., Riddle,. N, Yang, N. (2025, March) Optimal Experiment Design and Image Reconstruction using Generative Methods. Poster presented at the SIAM 2025 Computational Science and Engineering conference, Fort Worth, TX.
- **Manolas, S.**, Mitagar, A., Riddle,. N, Yang, N. (2025, February) Optimal Experiment Design and Image Reconstruction using Generative Methods. Poster presented at the Simons STEM Scholars Research Symposium, Stony Brook, NY.
- **Manolas, S.**, Mitagar, A., Riddle,. N, Yang, N. (2024, October) Optimal Experiment Design and Image Reconstruction using Generative Methods. Poster presented at the IEEE MIT Undergraduate Research Technology Conference (URTC), Cambridge, MA.
- **Manolas, S.**, Mitagar, A., Riddle,. N, Yang, N. (2024, July) Optimal Experiment Design and Image Reconstruction using Generative Methods. Poster presented at an end of program symposium for the Emory University Computational Mathematics for Data Science REU, Atlanta, GA.

PROFESSIONAL EXPERIENCE

Undergraduate Teaching Assistant Spring 2025
AMS 261 Applied Calculus III

- Hold weekly office hours to help students better understand concepts and strengthen their skills in multivariate calculus.

West Palm Test Prep Apr 2024 - Present
Ace Tutor

- Tutor students for a variety of college, college-level, and high school subjects
- Plan lessons and effectively coordinate with other tutors
- 100+ hours of tutoring

LEADERSHIP & VOLUNTEERING

Society of Industrial and Applied Mathematics Stony Brook Student Chapter May 2024 – Present
President Jun 2025 – Present

- Lead the student chapter in organizing events and setting long-term goals
- Effectively organize E-Board meetings and delegate tasks

Treasurer Jan 2025 – Jun 2025

- Managed and tracked club funds
- Allocated funds for events

Social Media Chair May 2024 – Jan 2025

- Managed club social media accounts
- Created posters and advertisements for events

Sustainable Horizons Institute Apr 2025 - Present

Volunteer

- Assist in the creation of "CULTIVATE Conversations," a series of online zoom talks and webinars for aspiring student researchers with interests in STEM / the Computational Sciences, with the aim of building diverse and inclusive communities
- Effectively collaborate with fellow team members to meet goals

Spectra Mar 2025 - Present

Profession Committee Member

- Plan satellite conference events for LGBTQ+ mathematicians at the 2026 International Congress of Mathematicians
- Effectively collaborate with fellow committee members to meet goals

Simons STEM Scholars Program Student Government Oct 2024 - Present

Cohort Representative

- Represent 29 fellow scholars as a liaison and advocate to program staff
- Responsible for planning events, advocating students' needs to program staff, informing students of duties
- Work with team of co-representatives to effectively achieve goals

American Institute of Aeronautics and Astronautics Stony Brook Student Chapter Mar 2024 - Present

Public Relations Chair

- Create posters and advertisements for AIAA events
- Help plan a variety of AIAA events focused on professional development and community building
- Effectively collaborate with fellow E-board members to meet goals

PROFESSIONAL MEMBERSHIPS

Spectra March 2025 - Present
Institute of Electrical and Electronics Engineers (IEEE) Sep 2024 - Present
Society for Industrial and Applied Math (SIAM) May 2024 - Present

TECHNICAL SKILLS

Design and Modeling Tools: LaTeX, MATLAB, CAD, Abaqus, COMSOL Multiphysics, Google Suite, Microsoft Suite
Programming: Python, Java, C++, MPI, OpenMP
Languages: Greek, Italian