Shamuel Auyeung

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SUMMARY

Recent Mathematics PhD graduate, data scientist, proficient coder, and leader with strong foundation in probability and statistics. Used to working in collaborative environments as well as individually, performing under pressure, simplifying complex problems for non-technical people. Looking for a quantitative finance role to apply my math background, communication and coding skills, and passion for data

SKILLS & CERTIFICATIONS

- **Quantitative:** calculus, linear algebra, probability, statistics
- **Languages & Platforms:** Python, MS Excel, VSCode, Mathematica
- **Python Libraries:** Pandas, NumPy, Scikit-learn, Matplotlib, seaborn, statsmodels
- **Machine Learning and AI:** linear regression, PCA, XGBoost, Random Forest, LLM's
- **Certifications:** The Erdős Institute Data Science Boot Camp

WORK EXPERIENCE

Trinity College, Department of Mathematics: Hartford, CT **2023 - Present**

Harold L. Dorwart Visiting Assistant Professor

- Teaching single/multivariable/vector calculus, statistics, and differential equations, communicating various abstract concepts and complex ideas to undergraduate students in an intuitive way

Stony Brook University: Stony Brook, NY **2017 - 2023**

Research Assistant & Teaching Assistant

- Lectured in problem-solving sessions and led discussions for over 400 students across 12 semesters. Subjects taught include Precalculus, Calculus for Business, Calculus I, II, III, Advanced Linear Algebra
- Developed course material and taught 3 undergraduate courses: Mathematical Thinking, Applied Abstract Algebra, Calculus II

LEADERSHIP EXPERIENCE

Graduate Student Seminar co-founder and organizer, Stony Brook University **2019-2023**

- Co-founded the Graduate Student RTG and Symplectic Geometry Seminars for students to learn advanced geometry, topology, and mathematical physics not offered in graduate school courses

Directed Reading Program mentor, Stony Brook University **2021**

- Mentored an undergraduate, teaching her advanced linear algebra, analysis of smooth manifolds, Lie groups and Lie algebras, and coached her in presenting what she learned at the end of the semester

SELECTED PROJECTS

- **The Effects of Daylight Savings Times (DST) on Market Outcomes** (The Erdős Institute) **Fall 2024**
  - Worked on a 3-person team to web scrape data to study DST on the US market and compared it to the Japan Stock Exchange, using statistical methods, logistic regression, k-nearest neighbors, and random forest (with AdaBoosting) classifiers. Our team detected a statistically significant effect in fall returns and spring volatility

PUBLICATIONS

Adjacent Singularities, TQFTs, and Zariski's Multiplicity Conjecture, arXiv **2024**

- Used Floer cohomology to prove an algebro-geometric conjecture

Local Lagrangian Floer Homology of Quasi-Minimally Degenerate Intersections, Journal of Topology and Analysis **2023**

- Developed Lagrangian Floer homology for a broad class of intersections

On the algebra generated by $\bar{\partial}, \partial, \mu, \bar{\mu}$, with J. Guu, J. Hu, Complex Manifolds **2023**

- Used Macaulay2 software to prove results regarding differential bi-graded (Lie) algebras in complex geometry

The Krein Matrix and an Interlacing Theorem, with E. Yu, SIURO **2014**

- Used MATLAB and spectral analysis to study a generalized eigenvalue problem

EDUCATION

Ph. D. *Stony Brook University***,** Mathematics (geometry and topology) **2023**

B.S. Calvin University, Mathematics, *summa cum laude* **2017**

- NSF Scientific Computing Scholar: for excellence in mathematical modeling and computation
- Barry Goldwater Scholar: for excellence in mathematical research
- Math Club Organizer, Top 17% in 2014 William Lowell Putnam Mathematical Competition

B.A. Calvin University**,** Philosophy and Ancient Greek, *summa cum laude* **2017**