Daniel Yu

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Availability: July 2024 - December 2024

EDUCATION

Northeastern University, Boston, MA — Sept 2022 - Present
Khoury College of Computer Sciences — **GPA**: 3.86/4.0
Candidate for Bachelor of Science in Computer Science and Mathematics — Expected Graduation May 2026

- **Awards**: D'Amore McKim School of Business Dean's Fund, Dean's List, Northeastern Integration Bee 2024 Finalist
- **Undergrad Coursework**: Advanced Linear Algebra, Advanced Probability and Statistics, Number Theory 1, Multivariable Calculus, Differential Equations, Object-Oriented Programming (OOP), Advanced Group Theory, Networks & Distributed Systems, Logic and Computation, Discrete Structures
- **Grad-level Coursework:** Graduate Algorithms, Grad Analysis, Grad Probability, Grad Machine Learning and Statistics

Stuyvesant High School, New York, NY — Sep 2018 - Jun 2022

TECHNICAL SKILLS & CERTIFICATIONS

Languages: Python | Java | C++ | ACL2s
Tools: Numpy | Pandas | Scipy | Scikit-learn | Tensorflow | Flask | Git | ArchLinux | Excel/VBA | SQL/Postgres
External Courses: MIT IAP 2024 Math of Big Data & ML, Stanford & DeepLearning.AI ML Specialization, Harvard CS50

EXPERIENCE

Northeastern Math Research Undergraduate Experience | *C++, Optimization Th., Numerical Linear Algebra* — May - July 2024
Research Assistant with Professor David Rosen — Boston, MA

- Optimizing eigenvalue calculations for large-scale, sparse, symmetric matrices through Domain Decomposition-based Schurs Complement approach to constructing preconditioners for Locally Optimal Block Preconditioning Conjugate Gradient (LOBPCG), stemming form Robotic Mapping problems for SLAM.
- Developing Numerical Linear Algebra library in C++, preliminary results show an order of magnitude improvement.

Khoury College of Computer Sciences | *Python, Linux, High Performance Computing (HPC)* — Sep 2023 - Present
Research Assistant with Professor Pete Manolios — Boston, MA

- Developed custom-made fuzzers to make every error a true positive by using ACL2s counterexample generation engine, addressing the problem of current Python static type-checkers erroneously throwing false positives which have been empirically found to disincentivize use leading to uncaught type errors
- Ran, designed, and collected experimental results on MIT Supercloud (HPC cluster), developing familiarity with Linux, bash scripts, and remote servers

Northeastern University Khoury College of Computer Sciences | *Java, Eclipse, JUnit* — Sep 2023 - Dec 2023
Teaching Assistant for Fundamentals of Computer Science 2 — Boston, MA

- Hosted 4-6 office hours per week, instructing students on various topics such as dynamic dispatch
- Graded 30+ assignments, quizzes, and tests each week from the basics of Java to Dynamic Programming
- Led lab section of 40+ students, directing and supervising students on lab materials

PROJECTS

IMC Prosperity Quant Trading Challenge | Competition | *Python, Pandas, Numpy* | Repository — Apr 2024

- Trading competition to simulate real-world market-making, market-taking, and HFT on the level of an orderbook
- Constructed both directional and nondirectional trading strategies based on volatility, options, arbitrage, pairs trading and market making/taking. Globally ranked 314th out of 10,000+ teams as a solo competitor and 91st in the US.

Statistical Arbitrage in Federal Bond Markets | Personal | *Python, Pandas, Numpy* | Repository — Mar 2024

- Analyzed US, GER, GB, JPY 10-year treasury bonds and bond indices for arbitrage opportunities from 20 Year daily interval to 3 Month 15 minute interval, found statistically significant cointegrated pairs
- Constructed trading strategies based on simple pair trading and volatility-based trading

WEAT Analysis of W2V & NLP algorithms | Hackathon | *Python, Gensim, ML/AI* | Repository — Mar 2023

- Won 4th place and Most Cross-Disciplinary Team award in MathWorks Responsible AI Hackathon
- Curated dataset of biased/unbiased books from Project Gutenberg, training W2V models on biased & unbiased datasets
- Performed WEAT analysis of sample & compared to Google W2V, finding significant negative bias

INTERESTS

Interests: Street Food | Trading Algos | Men's Fashion | Legos | Financial Markets | New York Knicks | Geopolitics