PHILIP UMEADI

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EDUCATION

Syracuse University Syracuse, NY
College of Arts & Sciences August 2023 – May 2026
Bachelor of Science in Applied Mathematics, Minor in Economics 3.16

RELEVANT WORK EXPERIENCE

Verisk | Analyst Intern | Jersey City, NJ June 2025 – August 2025

- Collaborated with senior developers to engineer a scalable Python framework to complete a vendor record migration of 27,000+ legacy documents to a new database ahead of annex season, when contracts are reviewed for renegotiation, leveraging pandas vectorization, regex, and RapidFuzz
- Engineered a programmatic automation suite to replace manual mail-merge workflows.

Extraordinary Re | Research Intern | New York, NY May 2023 – August 2023

- Researched how a consortium model could attract institutional participants and provide liquidity for liquid insurance contract markets and recruited a former GE Private Equity VP

RESEARCH & PROJECTS

Applied Research Tasks, NYU Stern Research Assistant Application

- Deployed Google DeepMind's AlphaGenome as an agent to score a GWAS variant's regulatory and expression effects for a Mendelian-randomization analysis, built a multi-provider (Claude/Gemini/Groq) AI-response monitoring pipeline with failover and scraped and normalized e-commerce marketing data

Mathematical Foundations of Machine Learning & NLP, **supervised by Justin Ko, PhD | Syracuse University**

- Conducted a structured review of MML (Deisenroth et al.), ISL (James et al.), and SLP (Jurafsky & Martin), spanning linear regression, PCA, kernel SVMs, and deep learning.
- Developed a nonlinear regression model in Python to forecast natural gas prices using polynomial–sinusoidal basis functions and MLE, capturing seasonal trends from 48 months of data to project one year ahead; used RMSE-based selection to control overfitting.
- **Character-Level N-gram Language Models for Hangman:** Built a character-level n-gram language model in Python to play Hangman on a 370K-word corpus; combined unigram through trigram models via linear interpolation with perplexity-optimized mixture weights, achieving 8.2 average incorrect guesses per word. Showed that the interpolation framework self-regulates model complexity based on data availability. Paper and code available here: https://github.com/mindphil/mml/tree/main/hangman

Binary Fission as a Homogeneous Branching Process, MAT 526 Independent Project

- Modeled bacterial colony extinction under antibiotic treatment as a homogeneous branching process. Derived a closed-form threshold for the minimum drug concentration guaranteeing eradication, then compared the theoretical efficacy of two real antibiotics using pharmacodynamic parameters from the literature (Bogdanov et al.). Built a Python/Manim simulation that animates the stochastic process. Paper and code available here: https://github.com/mindphil/branching-process-fission

Combinatorial Game Theory & C++ Systems Programming

- Investigated Kimberly Wood's n-cop generalization of the Shannon Switching Game on complete graphs and conjectured that the threshold grows linearly rather than the quadratic bound previously established; presented at a seminar (Jan. 2026).
- Building C++ proficiency (bit manipulation, bitboard representation) to contribute to a game solver.

Linear Algebra and Category Theory, supervised by Ben Kaufman | Syracuse University

- Applied Category Theory to matrix classification, studying the Kronecker problem and the decomposition of complex linear systems into indecomposable structures

TECHNICAL SKILLS

Programming: Python, C++ (basic), MATLAB, web scraping (BeautifulSoup)
Tools: Git, Docker, REST/LLM APIs (Claude, Gemini, Groq), Bloomberg Terminal, Excel/VBA
Mathematics: Probability theory, stochastic processes, numerical methods, (applied) linear algebra, ODEs & PDEs

LEADERSHIP & ACTIVITIES

Syracuse University Division 1 Rowing August 2023 – June 2026

- 20+ hours of weekly training

Manhattan College FED Challenge September 2022 – May 2023

- Built econometric models forecasting CPI, unemployment, and GDP

Manhattan College Investment Club September 2022 – May 2023

- Conducted DCF and comparable company analysis on equity positions for student-managed portfolio