Roman M. Paolucci

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EDUCATION

Columbia University New York, NY
Master of Science, Operations Research Aug 2023 - Dec 2025
Courses: Prob. & Stats, Stochastic Processes, Artificial Intelligence, Natural Language Processing

James Madison University Harrisonburg, VA
Bachelor of Science, Quantitative Finance and Mathematics Aug 2018 - May 2022
Cumulative GPA: 3.94/4.00, Summa Cum Laude
D1 Cheer Captain, President of Club Brazilian Jiu-Jitsu, Shelly Wheeler Financial Engineering Scholar

PROFESSIONAL EXPERIENCE

Saddle River Day School Saddle River, NJ
AI Strategist, Computer Science Faculty Aug 2023 - Present

- Founded SRDS.online an online platform for international students to take asynchronous courses in the following areas: quantitative finance, natural language processing, data science, machine learning, and artificial intelligence
- Built curriculum maps for the data analytics program covering topics in data science, machine learning, and artificial intelligence
- Led professional development workshops for faculty, focusing on the integration of large language models in lesson planning, course content, curriculum innovation, personalized student learning, and efficient feedback and grading
- Expanded the school's A.I. use policy for students to leverage the use of large language models as a tool to enhance learning
- Implemented a data-driven approach to track and analyze student performance and feedback in an applied AI framework resulting in a tailored student feedback experience that improved comprehension scores by approximately 20%

Bloomberg LP New York, NY
Quantitative Researcher – CTO's Office May 2021 - Aug 2022

- Engineered a large-scale reusable PySpark data pipeline leveraging Bloomberg's on-prem AWS cloud platform to preprocess and backtest equity strategies on large proprietary datasets including Twitter and News feeds
- Pioneered NLP-driven equity strategies employing advanced clustering techniques (ICA, PCA), achieving a Sharpe ratio of 2.52, securing several client investments of $200,000 annually for the data
- Developed key figures for the presentation of research to the business team for the BVAL terminal function introducing a Kalman filter approach to the pricing of illiquid bonds outperforming alternative machine learning models
- Authored a comprehensive guide on navigating Bloomberg's on-prem cloud computing platform for the QR team
- Researched new machine learning methodology to improve generated returns for value at risk and expected shortfall measures

RESEARCH EXPERIENCE

Columbia University, University of Tennessee Knoxville New York, NY, Knoxville, TN
Graduate Student Researcher, Research Scientist Aug 2022 - Aug 2023

- Created a custom large-scale data system to query, clean, preprocess, and analyze all tweets from 2012-2022 containing cash tags of Russell 3000 constituents using Twitter's V2API
- Applied new methodology to emojis and found, controlling for other measures of sentiment, such methodology produces an economically meaningful annual return of roughly 4%
- Paper available: How Many Words is a Picture Worth? Using Emojis to Predict Future Stock Returns

Technical Projects and Talks

Python for Finance Cookbook, 2e - Packt Publishing New York, NY
Technical Reviewer Aug 2022 - Present

- Reviewed the second edition of the Python for Finance Cookbook covering topics including multi-factor models, garch models, asset allocation and portfolio optimization, time series analysis and forecasting, and deep learning in finance

Bloomberg Quant Seminar Series New York, NY
Lightning Talk Speaker June 2021, April 2022

- Two-time lightning talk speaker discussing research on generating synthetic volatility surfaces using variational autoencoders and alternative generative structures to increase accuracy of pricing via a volatility feature approach by roughly 30% (Hull et al. 2021)

QFin - PyPi, GitHub New York, NY
Package Owner Apr 2021 - Present

- Developed a Python library from scratch for quant finance including modules for vanilla and exotic option pricing in a Black-Scholes and Heston framework achieving over 350 stars on GitHub and nearly 50,000 installations from PyPi

SKILLS

Python, R, STATA, MATLAB, Java, C/C++, LaTex, GitHub, Object Oriented Programming, Algorithms and Data Structures, Markov Chains, Monte Carlo Simulation, Stochastic Processes, Stochastic Calculus, Securities Pricing, Portfolio Risk Modeling