Giuseppina Orefice

oreficegiusy01@gmail.com — +39 3515490909
Linkedin — GitHub

Introduction

Master's graduate in Quantitative Finance with a proactive approach and a strong passion for learning new skills and technologies. Solid background in stochastic calculus, time series modelling, and machine learning. Experience in pricing derivative instruments, model calibration, and a strong economic foundation. Proficient in Python and statistical analysis, with a strong interest in financial markets and quant modelling approach.
"Success is not final, failure is not fatal: It is the courage to continue that counts." - Winston S. Churchill.
This quote celebrates the continuous courage and motivation to keep striving, which is central to my narrative of achievement.

Education

Sapienza University of Rome Rome, Italy
Master's Degree in Quantitative Finance and Data Analysis Oct 2023 – July 2025
GPA: 29.58/30 (4.0)
Relevant courses: Quantitative Financial Modelling, Econometrics, Machine Learning and Deep Learning, Time Series, Risk Management, Fixed Income
Thesis: *"Decoding skew with rough volatility models and machine learning"* The main goal of the dissertation was decoding the ATM Skew using a hybrid approach between stochastic models' volatility that enhances the roughness paths of the volatility with Hurst exponent less than 0.5 and machine learning.

- Estimation of a multiscale and multifractal Hurst exponent to take into account features of the volatility that change across time;
- Simulated log-price paths using the hybrid scheme for applying the rBergomi. rBergomi was simulated using the multiscale H estimated in the step before for each time to maturity with a calibrated forward curve. From them I have extracted the implied volatilities.
- Construction of a XGBoost for the prediction of the implied volatility using features like VIX, strike, time-to-maturity, greeks and additional Principal Components for capturing hidden insights.
- Performing feature importance and hyperparameter tuning for avoiding overfitting.
- Using the estimated implied volatilities for capturing the ATM Skew.
- Compared model skew with market ATM skew and extracting a trading strategies based on the ATM skew signals and using risk reverseals.

Università Vanvitelli di Caserta Caserta, Italy
Bachelor's in Economics and Finance Sept 2020 – July 2023
GPA: 108/110 (4.0)
Thesis: *"Credit risk management in cooperative credit banks: analysis of bank BCC Terra di Lavoro"*

Technical Skills

Programming Languages and Libraries: Python (Advanced - *NumPy, pandas, scikit-learn, TensorFlow/Keras, SciPy, statsmodels, Numba for performance optimization*), R (Intermediate)

Quantitative Modeling and Finance: Black-Scholes (Option Pricing and Hedging), Heston and Rough Bergomi (Stochastic Volatility Modelling), GARCH, ARIMA, VAR (Time Series Analysis and Forecasting). *Mathematical Concepts:* Stochastic Calculus, Numerical Methods (Monte Carlo Simulation, Finite Difference), Optimization Techniques.

Machine Learning and Data Analysis: Supervised Learning (Random Forest, Gradient Boosting, Neural Networks, Support Vector Machines), Unsupervised Learning (K-Means Clustering, PCA). *Techniques:* Cross-validation, Hyperparameter Tuning (Grid Search, Randomized Search), Feature Engineering, Model Evaluation.

Domain Knowledge: Equity Derivatives (SPX/VIX options, volatility skew/smile), Fixed Income, Risk Management, Algorithmic Trading Concepts.

Tools and Platforms: Git (Version Control), LaTeX (Technical Documentation), Excel (Advanced for financial modelling), Data Visualization (Matplotlib, Seaborn).

Soft Skills

Individual Work:

- Proactive and self-motivated, with a strong technical foundation and a continuous learning mindset. Prioritizing the life long learning;
- Skilled in working independently on complex data problems;
- Highly organized and detail-oriented, capable of delivering results in fast-paced and evolving environments;
- Strong problem-solving abilities essential for quantitative research and automation tasks.
- Peaceful kind of person. During my free time, I really enjoy staying with my dog and relaxing in nature.

Teamwork:

- Effective communicator with a collaborative approach, able to work closely with the others, trying to bring outside the best of everyone;
- Committed to knowledge sharing and fostering innovation within cross-functional teams.

Relevant projects

Value at Risk and Expected Shortfall
- Estimated VaR using historical simulation, variance-covariance, and Monte Carlo methods
- Computed Expected Shortfall for risk evaluation

Options Pricing
- Simulated option prices using Monte Carlo methods
- Applied variance reduction techniques (e.g., antithetic variates, control variates) to enhance computational efficiency.

Black-Scholes Model (Group Project)
- Studied theory and calibration of the BSM
- Computed option Greeks and calibrated IV
- Applied BSM to simulated stock data and enhancing hedging strategies.

Random forest for the estimation of probability of default for credit risk(Group Project)
- Application of random forest in order to estimate the probability of default; - Using Grid Search and Randomized Search for hyperparameter tuning.

Experience

Credit Risk Analyst Traineeship — BCC Iccrea Bank Casapulla, Jan 2023 – Mar 2023
- Traineeship during Bachelor's.
- Estimated default probabilities and applied Basel regulations.
- Analyzed risk exposures in the Italian banking system by compiling and interpreting large datasets, providing insights to senior analysts.

Certifications

CFA Level I Candidate — Exam scheduled for November

Languages

Italian (Native), English (Fluent), French (Intermediate), Spanish (Beginner), Dutch (Beginner)