Niranjan Kamalakannan

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OPT Work Authorization

EDUCATION

University of Maryland, Robert H. Smith School of Business — **College Park, MD, USA**
Master of Quantitative Finance, GPA 3.83/4 — May 2026

- Awarded the prestigious "Terrapin Scholar".
- Relevant coursework: Financial Data Analytics, Financial Management, Advanced Capital Markets, Machine Learning in Finance, Derivative Securities, Valuation, Monte Carlo Simulation, and Fixed Income derivatives.
- Leadership: Student Ambassador for MQF, Vice President of Operations in Smith Masters Finance Association.

PSG College of Technology — **Coimbatore, TN, India**
Bachelor of Engineering in Mechanical Engineering, GPA 7.67/10 — April 2023

- Alumni Coordinator, 2024 class.
- Leadership roles: Co-founder of Finverse.

SKILLS AND CERTIFICATIONS

- **Programming:** Python (pandas, NumPy, scikit-learn, matplotlib, statsmodels)
- **Analytics & Modeling:** Derivatives pricing (Black-Scholes, Binomial, Monte Carlo, Heston) (GitHub), Time series & volatility modelling (GitHub)
- **Machine Learning & Statistics:** Regression methods, feature engineering, Hypothesis testing, Probability Distributions
- **Data Visualization:** Python (Matplotlib, Seaborn, Plotly), Tableau
- **Certifications:** CFA Program – Level 1, Bloomberg Market Concepts (BMC)

WORK EXPERIENCE

Experiential Learning Program – Risk Analyst (Google-Sponsored Project) — **College Park, Maryland**
Risk Analyst — January 2025 – March 2025

- Partnered with Google to build an AI-based credit risk framework integrating NLP and financial modeling; analyzed over 60 banks and fintechs across six quarters using SEC filings, earnings calls, and call reports.
- Engineered credit risk scoring models using Google Gemini and Python, achieving 39% prompt accuracy across multiple trials and identifying distressed banks in a 2008 crisis backtest with high fidelity.
- Quantified credit risk trends through structured sentiment analysis and dynamic weighting of 16 risk categories, generating 1–5 risk scores per institution and uncovering early signals of credit deterioration.

PROJECT EXPERIENCE

Stochastic Interest Rate Modelling & Bond Pricing (Python) (GitHub)

- Constructed yield curves by calibrating Nelson–Siegel, Nelson–Siegel Svensson, and Cubic Spline models to market yield data, forming the initial term structures for interest rate simulations and pricing.
- Developed and calibrated Vasicek & CIR models using Maximum Likelihood Estimation (MLE) to capture mean-reverting dynamics and pricing bonds, caps, floors, and bonds with embedded options.
- Conducted model comparison, sensitivity, and scenario analysis to assess interest rate path impacts, providing insights into risk/return trade-offs in fixed-income portfolios.

Credit Risk Modelling (PD, LGD, EAD) – Basel III (Python) (GitHub)

- Developed an end-to-end credit risk pipeline using LendingClub loan data (2007–2014) to estimate PD, LGD, EAD, and combined Expected Loss, ensuring alignment with Basel III IRB capital adequacy standards.
- Built and validated statistical models: logistic regression PD model (AUROC 0.72, Gini 0.44, KS 0.3208), two-stage LGD model with logistic recovery classification (AUROC 64.8%) and linear regression recovery prediction (RMSE 0.09), and linear regression EAD model (53% correlation).
- Created a credit scorecard and monitoring framework, applying Weight of Evidence (WoE) and Information Value (IV) encoding, optimizing classification thresholds via TPR/FPR analysis, and tracking Population Stability Index (PSI) for drift detection and model stability.

Market Risk: Build VaR and CvaR Model and backtest the VaR Model (Python, Excel)

- Developed Value at Risk (VaR) models using Historical Simulation, Variance-Covariance, and Monte Carlo methods, alongside Conditional VaR (CVaR) to capture tail risk and extreme loss potential.
- Conducted rigorous backtesting with historical data using Kupiec's Proportion of Failures test and Basel Traffic Light framework to validate predictive accuracy and ensure regulatory alignment.
- Performed sensitivity analysis and stress testing to evaluate the impact of market shocks, improving model robustness and reliability.