

Ningyuan (Howard) Xie, CFA, FRM

☎ (314) 425-9260 | ✉ ningyuan.xie@wustl.edu | [in LinkedIn](#) | [🌐 Website](#) | [📁 GitHub](#)

PROFESSIONAL EXPERIENCE

• Reinsurance Group of America, Incorporated

Global HQ | Chesterfield, MO

Senior Financial Risk Analyst — Derivative Solutions, Investment Solutions

Mar. 2023 – Present

- **Team Leadership:** Led and mentored risk interns and junior analysts over multiple years, providing guidance on recurring and ad-hoc tasks; successfully transitioned all 5 interns to full-time positions through project completion and skill development
- **Hedge Trade Tickets:** Built **Python** tools that expand call-spread hedges into Black-Scholes priced legs and automatically issue official/backup trading tickets, enabling timely execution of recurring hedge trades with minimal manual operations
- **Hedge P&L Attribution:** Built a **Python** equity-option hedge attribution pipeline that decomposes asset vs liability P&L into notional and market drivers for hedge monitoring, with debug tooling that significantly reduces break-checking time
- **Option Validation:** Architected and deployed an automated **VBA** workflow for market data ingestion and option spread pricing across multiple indices, streamlining validation of recurring trading activities and reducing processing time by 75%
- **Market-Neutral Hedging:** Monitored daily Greeks and P&L of hedged positions through real-time market dashboards; executed strategic trades with derivative instruments to maintain market-neutral exposures within $\pm 2\%$ delta and rho limits
- **Dynamic Option Strategy:** Developed and backtested a delta hedging strategy in **MATLAB** that calculated values and deltas of bull call spreads, while dynamically replicating delta exposure with equity futures, achieving 95%+ hedge effectiveness
- **Rolling Option Strategy:** Engineered and backtested a 5-year rolling strategy in **MATLAB** incorporating annual participation adjustments and payoff reinvestment; delivered 30%+ annualized returns while maintaining 4% annual cost constraints
- **Static Option Strategy:** Developed and backtested a bull call spread strategy in **VBA** with **Excel Solver** optimization for reverse-engineering optimal strikes; enabled efficient batch scenario analysis across 20+ years of daily time series data

Financial Risk Analyst — Market Risk Services, Global Financial Solutions

Jan. 2021 – Mar. 2023

- **Liability Hedging:** Constructed risk-neutral liability reserve models in **VBA** and built optimized swaption portfolios that replicated liability cash flows by minimizing net cash flow deviations, improving hedging efficiency and portfolio monitoring
- **Real-World Rates Modeling:** Engineered dynamic factor models in **MATLAB** to analyze treasury and credit spreads via time-varying level, slope, and curvature factors; calibrated AR processes to forecast real-world yield curves for liability valuation
- **Real-World Equity Modeling:** Modeled equity returns in **MATLAB** as risk-free rates plus risk premiums, capturing volatility dynamics through GARCH; calibrated ARMA-GARCH to simulate real-world equity return paths for capital and risk projections
- **Risk-Neutral Rates Modeling:** Built interest rate models using **Numerix Python SDK**, encompassing workflows from derivative calibration to economic scenario generation; processed forecasted rates and discount factors for liability modeling
- **Risk-Neutral Equity Modeling:** Engineered equity models in **Numerix Excel** with GAAP volatility calibration and risk-neutral equity path simulation; validated and processed model outputs for liability modeling using custom **MATLAB** scripts

Risk Management Intern — Market Risk Services, Global Financial Solutions

Sept. 2020 – Jan. 2021

- **Market Data Processing:** Extracted and processed raw market data from **Bloomberg Terminal**; applied no-arbitrage constraints to clean interest rate data in **MATLAB**, establishing company-wide reference rates for critical model inputs
- **Workflow Automation:** Developed comprehensive automation tools in **Python**, **MATLAB**, and **VBA** for data ingestion, curve construction, scenario preprocessing, and derivative hedging workflows, accelerating production processes by 20%

PROJECT EXPERIENCE

• PyHealth Open-Source Contribution | *Python, PyHealth* | [GitHub PR](#)

- **Dataset Integration:** Added full **SUPPORT2** dataset support (dataset class, YAML config, documentation, test data) with a test suite following PyHealth standards, strengthening dataset coverage for open-source clinical ML research
- **Task Development:** Implemented a task class with feature extraction across six clinical feature groups; included a demo example illustrating the complete workflow from dataset loading to ML-ready samples

• Deep Learning Research Reproduction: Survival Analysis | *Python, PyTorch, scikit-learn* | [report](#) | [slides](#) | [📄](#)

- **Framework Replication:** Reproduced 15 core functionalities of the Auton-Survival framework integrating survival regression, patient phenotyping, and evaluation metrics for censored time-to-event data in healthcare
- **Ablation & Validation:** Conducted two ablation studies (mixture components, architecture depth) and a cross-dataset validation; clarified how design choices affect performance and identified feature-dependency limitations in cross-domain transfer

• Academic Data Analytics Platform | *Python, Dash Plotly, MySQL, MongoDB, Neo4j, PythonAnywhere* | [website](#) | [📄](#)

- **Full-Stack Development:** Developed a web-based analytics dashboard for prospective graduate applicants to explore academic programs, compare universities, and identify prominent researchers through interactive visualizations
- **Cloud Infrastructure:** Deployed a multi-database architecture using Aiven (MySQL), MongoDB Atlas, and Neo4j Aura as data stores; ensured continuous availability via PythonAnywhere hosting and GitHub Actions-based keep-alive scheduling

TECHNICAL SKILLS

Programming: Python, MATLAB, VBA, R, SQL, C++, Java, HTML/CSS, LaTeX

Developer Tools: VS Code, JetBrains IDEs, Jupyter Notebook, Google Colab, Git, Bloomberg Terminal, Numerix SDK

Databases & Cloud: MySQL, MongoDB, Neo4j, AWS, Aiven, PythonAnywhere, Render

EDUCATION

• University of Illinois Urbana-Champaign

Champaign, IL

Master of Computer Science, Artificial Intelligence & Information Systems Tracks | GPA: 4.00/4.00

May 2024 – Dec. 2026

• Washington University in St. Louis, Olin Business School

St. Louis, MO

M.S. in Finance—Quantitative Finance | GPA: 3.99/4.00 (1/102), GMAT: 750 (98%)

Jul. 2019 – Jan. 2021

- **Honors:** Charles F. Knight Scholar & Outstanding Finance Student Award—Quantitative (Top 1)

• University of Nottingham

Nottingham, UK

B.S. in Finance, Accounting and Management | GPA: 3.90/4.00, First Class Honors

Aug. 2015 – Jun. 2019

- **Honors:** Provost's Scholarship 2018 (1.5%), Best Student of the Year 2017 (Top 1), President's Scholarship 2017 & 2016 (1%)