# TANISHK YADAV

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## EDUCATION

**NEW YORK UNIVERSITY, TANDON SCHOOL OF ENGINEERING**                 Brooklyn, NY
Master of Science in Financial Engineering                 05/27
- **Coursework:** Introduction to Derivative Securities, Valuation, Quantitative Methods, Credit Risk and Financial Risk Management, Econometrics and Time Series Analysis, Real Time Risk Management, Algorithmic Trading and High Frequency Finance, Corporate Valuation

**SRM UNIVERSITY** (100% scholarship)                 Amaravati, India
Bachelor of Technology in Computer Science & Engineering (specialization in Artificial Intelligence & Machine Learning)     06/25
GPA: 8.33/10
- **Coursework:** Single/Multi Variable Calculus, Differential Equations, Linear Algebra, Probability, Statistics, Economics

## TECHNICAL SKILLS

- **Languages:** Python, C++, SQL, R, Java, JavaScript, C, HTML/CSS
- **Libraries & Frameworks:** Pandas, NumPy, SciPy, Statsmodels, Scikit-Learn, TensorFlow, Keras, XGBoost, Matplotlib, CCXT
- **Financial Concepts:** Options Pricing (Black-Scholes, Greeks), Monte Carlo Simulation, VaR/CVaR, Regime Switching (HMM), Tail Risk Hedging, Bootstrap Resampling, Time Series (ARIMA, AR), Mean-Variance Optimization, Transaction Cost Analysis
- **Tools & Platforms:** Bloomberg Terminal, Git, LaTeX, Jupyter, Excel, VS Code
- **Certifications:** Bloomberg Market Concepts (BMC), Bloomberg Finance Fundamentals, Akuna Capital Options 101, Financial Markets (HONORS), AI for Investments, IBM Machine Learning

## EXPERIENCE

**IUDX (INDIA URBAN DATA EXCHANGE),** Bengaluru, India                 06/23 - 08/23
*Summer Intern, Framework Development*
- Developed a secure, cross-platform digital consent collector using SHA-256 cryptographic hashing, ensuring regulatory compliance for critical data aggregation on the ADeX government platform
- Engineered full-stack JavaScript solutions for consent collection and retrieval, ensuring 100% compliance with central government regulations and enabling ADeX to create 38 critical datasets for a government-academia joint venture as a team of 4

## PROJECTS

*Dynamic Regime-Based Sector Allocation & Tail Risk Hedging* | Python, Scikit-Learn, Monte Carlo
- Built a Regime-Switching Risk Model using Hidden Markov Models (HMM) to classify market states into 4 regimes (Crisis, Bear, Transition, Bull), leveraging a custom Synthetic History Generator to backfill sector ETF data to 2005 for capturing GFC-era volatility dynamics
- Engineered a strict Walk-Forward (Out-of-Sample) backtest (2023–Present) using Ledoit-Wolf shrinkage for covariance estimation; reduced Maximum Drawdown by 46% (-10.12% vs. -18.76% benchmark) while achieving a Sharpe Ratio of 1.49
- Validated robustness via Parametric Bootstrapping (1,000 simulations) and Null Hypothesis Falsification, proving true alpha generation (+$26K excess return per $100K deployed) with $p < 0.05$ rejection of noise-driven outperformance

*RSI Oscillator Trading Strategy* | Python, NumPy, Pandas, LaTeX
- Designed and backtested an RSI(11) mean-reversion strategy on the XLF Financial Sector ETF, implementing grid search optimization over signal thresholds and holding periods to maximize risk-adjusted returns with forced end-of-sample liquidation
- Modeled return predictability using AR(1) processes and validated out-of-sample performance via 200-sample parametric bootstrap (1,000 iterations), establishing statistically significant alpha generation at the 5% confidence level
- Implemented limit order execution framework with microstructure-aware entry/exit logic and transaction cost modeling, producing 7 analytical figures including cumulative P&L, drawdown curves, and signal distribution plots

*S&P 500 Sector-Level Clustering & Market Structure Analysis* | Python, Scikit-Learn, Keras, Pandas
- Analyzed 66 S&P 500 sub-sectors across 425+ companies using 5 normalized financial metrics (YoY market cap growth, revenue growth, weighted-simple variance, 6-month and 4-year sector beta) to classify market structures as monopolistic, duopolistic, or oligopolistic
- Developed a custom overperformance index using squared-weight allocation to identify dominant firms within each sector, and applied Hierarchical + K-Means clustering to uncover inter-sector similarity patterns
- Trained a multi-layer perceptron (MLP) neural network for sector cluster classification, achieving 93% accuracy on held-out test data; built end-to-end pipeline across 13 modular notebooks with CANSLIM screening and LSTM price forecasting

## LEADERSHIP

- **Student Council Public Relations Convener,** SRM University, 2022-2023
  - Represented 10,000+ students as primary liaison to administration; directed cross-functional teams to execute cultural fests with $100,000+ budgets