

SHIV KUMAR

Quant Developer | Algorithmic Trading & Financial Data Engineering
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PROFESSIONAL SUMMARY

Quantitative Developer with strong expertise in Python, algorithmic trading, quantitative research, and financial data engineering. Experienced in designing, developing, and deploying systematic trading strategies, backtesting frameworks, and real-time market analysis systems, with a solid grounding in statistical modeling, machine learning, and low-latency market data processing.

Hands-on builder of end-to-end trading infrastructure — historical data pipelines, live market data integration, strategy research, portfolio analytics, risk management modules, and AI-powered financial assistants — backed by a strong software engineering foundation in scalable backend development, REST APIs, cloud deployment, and automation.

TECHNICAL SKILLS

Programming Languages: Python, SQL, JavaScript

Quantitative Finance: Algorithmic Trading, Quantitative Research, Statistical Arbitrage, Pair Trading, Gap Trading, Mean Reversion, Momentum Strategies, Options Strategies, Market Microstructure, Portfolio Analytics, Risk Management, Performance Attribution

Python Libraries: Pandas, NumPy, SciPy, Scikit-learn, Statsmodels, Matplotlib, TA-Lib, XGBoost, LightGBM, backtrader

Machine Learning: Regression, Classification, Clustering, Time Series Analysis, Feature Engineering, PCA, Model Evaluation, Cross-Validation, Ensemble Learning

Trading Technologies: REST APIs, WebSocket Streaming, Real-Time Market Data Processing, Historical Data Management, Event-Driven Systems, Order Management Logic, Trade Analytics, Strategy Backtesting

Backend & Deployment: Flask, FastAPI, Django, Docker, Linux, AWS EC2, Git

PROFESSIONAL EXPERIENCE

Quantitative Developer *Algorithmic Trading Research & Development*

Designed and developed multiple quantitative trading strategies end-to-end, spanning research, backtesting, optimization, and performance evaluation.

- Developed quantitative trading models using statistical and mathematical techniques.
- Built robust backtesting engines supporting realistic transaction costs, leverage, position sizing, and trade analytics.
- Processed large-scale historical market datasets to support strategy research.
- Implemented real-time market data processing pipelines using broker APIs and WebSocket feeds.
- Performed feature engineering on financial time-series data.
- Automated trading research workflows using Python.
- Developed data visualization dashboards for strategy monitoring and evaluation.
- Built reusable quantitative research modules to accelerate strategy development.

SELECTED PROJECTS

Statistical Pair Trading Engine

Complete statistical arbitrage framework for equities.

- Implemented dynamic pair selection, correlation analysis, spread modeling, and rolling hedge ratio estimation.
- Built z-score based entry/exit logic with mean reversion detection, position sizing, and stop-loss / time-based exit rules.
- Modeled transaction costs and produced detailed performance reports covering win rate, total return, Sharpe ratio, profit factor, maximum drawdown, average holding period, and risk-adjusted returns.

Gap Trading Research Framework

Research platform for analyzing historical gap behavior across stocks.

- Built gap up/down detection, gap-fill probability estimation, and historical success rate analysis.
- Developed gap bucket classification, momentum scoring, and trade ranking logic.
- Automated multi-stock batch processing and reporting of gap fill %, historical accuracy, trade score, market score, and overall probability metrics.

Real-Time Market Data Platform

High-performance market data processing system.

- Built live market streaming with WebSocket integration and historical data synchronization.
- Implemented multi-symbol processing, data validation, OHLC generation, and technical indicator computation.
- Designed an event-driven architecture with direct API integration to brokerage platforms.

AI-Powered Financial Research Assistant

Intelligent assistant for financial news aggregation, research analysis, and natural language querying.

- Aggregated financial news and equity research reports with AI-powered summarization and stock analysis.
- Built strategy explanation, technical analysis support, and recommendation generation via natural language queries.
- Leveraged LLMs, LangChain, Retrieval-Augmented Generation (RAG), vector databases, and document processing.

Strategy Backtesting Framework

Reusable Python framework for intraday and swing strategy simulation.

- Supported portfolio simulation with commission and slippage modeling, risk management, position sizing, and capital allocation.
- Generated performance analytics, equity curves, trade statistics, and cross-strategy comparison reports.

Quantitative Data Engineering Pipeline

Automated data pipelines for financial research.

- Built historical data ingestion with cleaning, missing-value handling, and corporate action adjustments.
- Implemented time-series transformation, feature generation, multi-timeframe aggregation, and efficient storage/retrieval.

MACHINE LEARNING PROJECTS

- Stock Movement Prediction using Machine Learning
- Feature Engineering for Financial Time Series
- Market Regime Classification
- Ensemble Models for Financial Prediction
- PCA-based Dimensionality Reduction
- Classification Models using XGBoost, AdaBoost, and Random Forest

CORE COMPETENCIES

Quantitative Research • Algorithm Development • Financial Modeling • Statistical Analysis • Time-Series Modeling • Data Engineering • Machine Learning • Market Data Processing • Strategy Optimization • Portfolio Analytics • Python Development • API Development • Cloud Deployment • Problem Solving • Software Architecture

ACHIEVEMENTS

- Designed multiple end-to-end quantitative trading strategies, from research through backtesting and performance evaluation.
- Built reusable quantitative research frameworks that accelerated new strategy development.
- Developed scalable market data processing pipelines for live and historical financial data.
- Combined machine learning, statistics, and software engineering to deliver production-ready quantitative solutions.
- Built AI-enabled financial research tools integrating market data, research reports, and large language models.