Aayush Prasad

Software Engineer | AI for Finance & Trading | AWS, Google & Databricks Certified
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Professional Summary

Versatile Software Developer and Quantitative Technologist with 6+ years of experience in building high-performance trading systems, C++ libraries, cloud-native data platforms, and AI-driven financial applications. Proven expertise in low-latency algorithmic trading (C++, FIX, ITCH), real-time strategy simulation, and modern ML/AI toolchains (Python, Streamlit, FAISS, AWS). Adept at designing robust execution engines, developing backtesting frameworks, and deploying scalable infrastructure using Docker, GitHub Actions, and AWS services. Certified across AWS, Databricks, and GCP; passionate about behavioral finance, agentic AI systems, and bridging trading intelligence with production-ready software.

Professional Experience

Software Developer | KGS Tech | July 2025 - Present

- Built scalable, **cloud-native applications** using **Python and AWS (Lambda, S3, DynamoDB, RDS, Route53, EBS, IAM)**, implementing modern **DevOps practices** and **CI/CD pipelines** with **GitHub Actions**.
- Developed **RESTful APIs** using **FastAPI**, **Flask**, and **Django**, leveraging asynchronous capabilities for **high-volume data processing** and ensuring seamless database operations with **SQL query optimization**.
- Designed and maintained **data pipelines and ETL processes** with **AWS Glue**, integrated **Snowflake** using custom **Python scripts**, and utilized **PySpark-SQL** and **Pandas** for **complex statistical and quantitative analysis** of large datasets.
- Built interactive dashboards and admin panels using **React and Angular** to **visualize processed data**, monitor application performance, and support **quantitative decision making** processes.
- Implemented **orchestration tools** and **cloud infrastructure** solutions, managing multiple projects while delivering high-quality results under tight deadlines.

Research Assistant | Rivier University | Dec 2024 – July 2025

- Designed and deployed **AI-powered trading agents** using **Python, Streamlit, and AWS** to analyze **financial markets** and **investment strategies**, applying **machine learning** and **econometrics** for **portfolio management** and **alpha generation**.
- Applied **probability, statistics, and foundational mathematics** including **linear algebra** and **DSP techniques** with **linear predictive filters** to detect dominant market trends and **valuation metrics**.
- Accelerated project progress by **50%** using **Agile methods** and **modern software engineering principles**, including daily standups, collaborative testing cycles, and **version control systems (Git)**.
- Boosted **prediction accuracy** by **25%** through advanced **quantitative analysis** with real **market data**, **fundamental factors**, and continuous **model deployment** using **Python data science stack (NumPy, Pandas, Scikit-Learn)**.
- Integrated **CrewAI-style agent architecture** for modular decision logic and **FAISS** for similarity-based signal tracking, contributing to **innovative and collaborative solutions** for **investment concepts**.
- **Led a professional team** of junior developers in capstone trading assistant project: managed **CI/CD pipelines**, performed code reviews, facilitated sprint planning, and **maintained software in version control systems**, demonstrating ability to **work effectively in professional team environments**.

Algorithmic Trading Developer | H.M. Infotech | September 2020 – August 2024 (Company incorporated in 2021)

- Spearheaded development of **end-to-end quantitative trading infrastructure**, architecting co-located **ultra-low-latency strategy engines** and **high-volume data processing** systems capable of handling **5-10 million events/second** for **investment strategy backtesting** and real-time execution.
- Designed and implemented adaptive **VWAP/TWAP execution algorithms** powered by **complex statistical analysis**, **econometric models**, and **probability-based risk management**, actively trading **$50M+** in daily notional volume across **U.S. financial markets**.
- Built comprehensive **data pipelines and ETL processes** for **large dataset manipulation (100GB+ financial market data)**, reducing I/O processing time by **70%** while enabling **quantitative analysis** of **NSE/BSE tick data** and **fundamental factors**.
- Engineered robust **FIX protocol adapters** with dynamic throttling and failover capabilities, **integrating external data sources** and **APIs** while ensuring **99.99%+ system reliability** in **high-volume trading environments** and maintaining **strong stakeholder relationships**.
- Created sophisticated **Level-2 order book simulator** with full **data engineering** capabilities and **machine learning-enhanced** fill simulation for accurate **portfolio management** benchmarking and **alpha generation** through **innovative solutions**.

- Developed internal **C++ SDK** and **pybind11-based Python interface** utilizing **Python data science stack (NumPy, Pandas, SciPy),** reducing strategy onboarding time from **3 weeks to 3 days** through **automation** and **modern software engineering principles**.
- Implemented real-time **quantitative risk management** systems with **PnL dashboards** using **statistical modeling**, **Redis streams**, and **Python Dash**, maintaining **99.95% system uptime** while **managing multiple projects** under tight deadlines.
- **Automated CI/CD pipelines** and validation processes with **Jenkins, GitHub Actions, and Docker**, improving deployment cycle time by **60%** and demonstrating expertise in **modern DevOps practices** and **cloud orchestration tools**.
- Enabled testing of **50+ quantitative strategy variants** across multiple **market regimes** using **foundational mathematics (linear algebra, calculus)** and configurable **probability models** for **investment concepts** and **valuation metrics**.
- **Solved complex technical problems independently** while **adapting legacy systems** to modern standards, **continuously improving infrastructure** and **contributing to alpha generation** through collaborative **quantitative decision making**.

Software Engineer - Low Latency Systems | Desire Infotech | May 2019 – July 2020

- Built a lightweight **C++** module for end-to-end order flow latency tracing with microsecond-resolution timestamps, enabling detection of **20–40µs** bottlenecks in the routing layer**.**
- Developed a simulated order book feed handler for stress testing trading logic using historical market data replay at **~1M messages/sec**.
- Contributed to an **internal profiling toolkit** that reduced performance analysis time by **35%** for algorithmic trading infrastructure.

Projects

Agentic AI Trading Assistant – Adaptive Indicator Engine (User Story Lead: US16)

- Developed an **AI trading system** using **linear predictive filters** and **cycle detection** to adapt **RSI/MACD** indicators based on real-time market behavior.
- Built modular agents using a **CrewAI**-inspired design, allowing for intelligent, responsive strategy updates.
- Created **dashboards** with **cycle heatmaps**, **spectrum visualizations**, and **prediction overlays** using **Streamlit** and **Plotly**.
- Validated performance through **backtesting**, **simulated volatility spikes**, and **user testing** with traders.
- Collaborated as **senior developer** and **user story owner**, **guiding junior devs**, **managing code reviews**, and **coordinating releases** in a **course-structured team**.

Quantitative Finance Algorithms Library (C++ Trading Models & Pricing Engines)

- Built a modular **C++ library** implementing core quantitative models such as **Black-Scholes** for **option pricing and geometric Brownian motion for asset simulation**, aligned with **real-world trading use cases**.
- Designed **high-performance**, reusable components for **derivative pricing** and **risk analytics**, focusing on **numerical precision**, **memory efficiency**, and **low-latency computations**.
- Implemented **analytical** and **numerical methods** (**closed-form solutions, binomial trees, Monte Carlo simulations**) to simulate **asset paths** and evaluate **payoffs for options and structured products**.

Certifications

- **AWS Certified Solutions Architect – Associate**, ID: 11643386159e4103b6215525e2dcef48
- **AWS Certified Machine Learning Engineer – Associate**, ID: 2e91878b04ad43ca87fa0c55b779a35d
- **Databricks Certified Data Engineer – Associate**, ID: 154965133
- **Google Cloud Professional Data Engineer**, ID: a16b1e519bdc4f73ad25f9c7950061e2
- In Progress: Bloomberg Market Concepts

Technical Skills

- **Languages:** C++, Python, Java, C#, JavaScript, HTML/CSS, SQL, T-SQL, MATLAB
- **Data Engineering & Tools:** MySQL, PostgreSQL, Databricks, Snowflake, Apache Spark, FAISS, Chroma
- **Testing & Documentation:** PyTest, Behave, Swagger, Git, GitHub, Agile/Scrum practices

Education

Master of Science in Computer Science | Rivier University, Nashua, NH — 2024
Relevant Coursework: Artificial Intelligence, Machine Learning, Robotics, Algorithms, Java, OOD, Operating Systems
Bachelor of Engineering in Computer Engineering | Gujarat Technological University, India — 2020
Relevant Coursework: Analysis and Design of Algorithms, IoT, Data Mining & Business Intelligence, DBMS

Extracurricular Activities & Interests

Circulation Assistant, Regina Library – Rivier University
Vice President, Mozilla Campus Club – Gujarat Technological University