MS Data Science in Finance
Purdue University, Dept. of Statistics

Oracle Certified Professional
Java SE11 Developer

Hitansh Shah

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INTERNSHIPS

Geneva Trading — Chicago, IL
Quant Research Intern — Jun, 2025 – Aug 2025

- **Trading team (HIT):** investigated **microstructure behavior** in the 30s preceding futures settlement. Identified abnormal volume and activity spikes at fixed intervals before close, consistent with systematic algorithmic execution.
- Engineered a dataset combining passive order book states and aggressive trade events. Performed signal analysis to identify deterministic structure, followed by deep learning experiments using **convolutional neural networks** with **Inception-style blocks** to model price impact and flow patterns.
- Prior to HIT rotation, built an OAuth2 authentication module on the **DevOps team**, abstracted via decorators for FastAPI and later generalized for most WSGI applications.
- On the **Core Data team**, analyzed CME microburst events; examined message queue overflow, order flow entropy, and breakdown by message type to evaluate infrastructure resilience under burst conditions.

Indian Institute of Technology Bombay, Environmental Science and Engineering — Mumbai, India
Research Consultant — Sep, 2023 – Aug, 2024

- Spearheaded the development of a self-calibrating, self-diagnosable air quality sensor network to enhance monitoring accuracy and reduce costs.
- Used state-of-the-art ML models to correct readings from a network of low-cost sensors.
- Engineered and implemented an AWS EC2-based data collection portal (DCP) to standardize and clean raw sensor data, ensuring reliable datasets for analysis.
- Developed and maintained a dashboard for live monitoring of sensor health and degradation. (link: IITB-DCP)

Nomura Holdings, Inc. — Mumbai, India
Software Engineering Intern — Jan, 2024 – Jul, 2024

- Streamlined financial reporting processes by automating OBIEE reports, reducing creation time by up to 50%
- Developed Unix/Linux shell scripts to automate system processes, enhancing operational efficiencies
- Implemented security upgrades and integrated applications with corporate identity and access control systems.

KEY PROJECTS

Bayesian Oracle for Sequential Sports Prediction Markets (Counter-Strike 2)

- Built a full **statistical forecasting engine** for live match markets on **prediction markets (Kalshi)**.
- Designed a **Bayesian multinomial logistic regression model**, trained using **Stochastic Variational Inference (SVI)** to generate calibrated, uncertainty-aware win probabilities.
- Engineered map-level and series-level priors, then combined them with live predictions using **entropy-based blending** for coherent fair-value odds.
- Developed a **Monte-Carlo simulator** for Best-of-3 match structures, propagating round-level distributions into full-series outcome distributions.
- Implemented real-time inference pipelines capable of processing high-frequency game state data, updating forecasts on every **40ms.**
- Used this oracle to empirically quantify market inefficiencies, and manually execute trades on **Kalshi** (+20%/game)

Heatwave and AQI prediction

- Researched, mined, and engineered time-series features from Bhuvan Satellite and NASA POWER data to predict heatwave intensity.
- Built RNN models (LSTM, GRU) achieving one-year temperature forecasts with <2°C average error.

CSGO TradeUp Finder

- Scraping Steam Community Market for current market prices for in-game cosmetic items, then using Genetic Algorithms and conventional methods to exploit market imperfections to create profitable trades.
- Found trades with Expected Returns > 20% with minimal risk.

EDUCATION

Purdue University, Department of Statistics — West Lafayette, IN
Master of Science, Data Science in Finance — Aug, 2024 - Present

Indian Institute of Technology Madras — DLP, India
Bachelor of Science, Data Science and Programming — Dec, 2023

NMIMS, Mukesh Patel School of Technology Management and Engineering — Mumbai, India
Bachelor of Technology, Computer Engineering — May, 2024

ADDITIONAL INFORMATION

- **Key Skills:** Python(5 YoE), Java (6 YoE), C/C++, R, pandas, numpy, SQL, SQLite, OracleDB, Tensorflow, Keras, PyTorch, scikit-learn, scikit-image, scipy, AWS, Linux, Darts, Neural Prophet, Flask, Jinja2, Redis, Celery, REST APIs, Data Science, Machine Learning, Computer Vision, Time Series Forecasting, Web Dev, Problem Solving, Corporate action, Financial markets, Recurrent Neural Networks, Image Processing, Signals Processing, Data Analysis, Chess.