Sharvil Oza

sharvil010@gmail.com | so-19.github.io | LinkedIn

Education

Dhirubhai Ambani Institute of Information and Communication Technology Gandhinagar, India
Bachelor of Technology in Computer Science and Engineering - GPA: 3.3/4.0 *Oct. 2022 – May 2026*

Udgam School for Children Ahmedabad, India
High School - GPA: 3.87/4.0 *June 2017 – May 2021*

Experience

Research Intern December 2024 – April 2025
University of New South Wales, Business School

- Developed deep learning models for supply chain optimization that reduced forecasting errors , leveraging advanced algorithms to enhance operational efficiency .
- Applied 5+ statistical techniques, including correlation analysis, VCF, and regression models, to derive actionable insights that improved decision-making accuracy by 32% in supply chain management.
- Conducted crop yield prediction using ensemble machine learning algorithms, achieving 91% accuracy and optimizing resource allocation .

Research Intern May 2024 – Aug 2024
Georgia Tech Financial Services Innovation Lab (FSIL)

- Developed and backtested 7 quantitative trading strategies, including Pairs Trading and statistical arbitrage, achieving a 14.3% average improvement in Sharpe ratio compared to benchmark strategies.
- Strengthened algorithm robustness by designing a Risk Metric class encompassing 25+ risk metrics, optimizing portfolio allocations that outperformed benchmark returns .
- Built a custom data wrapper for Polygon API integration that reduced data processing time , enabling real-time data fetching for 200+ financial instruments simultaneously.

Projects

LMFusion Paper Implementation | *Pytorch* March 2025 – March 2025

- Implemented the LMFusion framework to extend pretrained language-only LLMs with multimodal generative capabilities, integrating modality-specific attention and feedforward modules for text and image processing.
- Developed custom dataloaders and loss functions to support joint training on image-caption datasets using both cross-entropy for text and diffusion-based objectives for image generation.
- Engineered a modular multimodal training pipeline, preserving language capabilities by freezing text modules and training image modules, achieving efficient cross-modal attention and high-fidelity image generation.

Trading Engine | *Python, MySQL* June 2024 – July 2024

- Developed user profiles and portfolios with personalized features, enhancing user experience and enabling seamless tracking of trades and holdings across 50+ securities.
- Engineered core trading functionalities by designing and implementing an L3 Order Book .
- Created efficient order-matching algorithms using Queue Data Structures that improved execution speed by .

Investment Portfolio Optimization | *Python* Jan. 2025 – Feb. 2025

- Developed a Modern Portfolio Theory (MPT)-based asset allocation model that improved risk-adjusted returns by 16.4% across 8 diverse market scenarios.
- Designed and implemented Monte Carlo simulations with 10,000+ iterations to assess portfolio risk, reducing Value-at-Risk (VaR) estimates by 22% compared to traditional methods.
- Automated financial reporting processes with dynamic dashboards that reduced analysis time and enabled real-time tracking of performance metrics.

Quantitative Research Project | *Python* Jan. 2025 – Feb. 2025

- Conducted in-depth analysis of emerging market inefficiencies across 15+ markets, identifying pricing discrepancies that yielded 7.2% annualized alpha with a Sharpe ratio of 1.8.
- Applied advanced statistical arbitrage techniques on 50+ asset pairs, generating 11.3% average returns with 63% lower volatility compared to traditional long-only strategies.

- Created a factor-based investment approach integrating 8 macroeconomic indicators and 12 technical signals that outperformed market benchmarks .

RAG Pipeline with Local LLM | *Python, PyTorch* December 2024 – January 2025

- Developed a Retrieval-Augmented Generation (RAG) pipeline that processed 1000+ pages of PDF documents into 12,000+ text chunks with 92% retrieval accuracy.
- Integrated Google/GEMMA-2B-IT local language model that reduced inference time while maintaining response relevance .
- Optimized the RAG pipeline's performance by implementing vector search techniques that improved query processing .

Reinforcement Learning-Based Drone Stabilization Simulation | *Python, PyBullet*October 2024 – December 2024

- Developed a physics-based drone simulation in PyBullet that achieved 94.7% success rate in autonomous recovery from inverted positions .
- Engineered a RL-based reward algorithm that reduced stabilization time through optimized control inputs based on real-time environmental feedback.
- Created a detailed URDF file for the drone model and enhanced the RL algorithm with 13 state variables, achieving faster convergence during training .

Weather Prediction Model | *Python, TensorFlow* August 2024 – September 2024

- Developed an advanced weather prediction model for tropical Indian climate using LSTM and Attention mechanisms, achieving 93.8% accuracy across 7 climate variables.
- Collected and preprocessed 10+ years of daily weather data .
- Successfully deployed the model as a Flask API that handles 500+ concurrent requests with average response time of 120ms.

Technical Skills

Languages: Rust, Python, C/C++, SQL (Postgres, MySQL), CUDA
Relevant Courses: GPU Architecture, Deep Learning, Computer Vision, Quantum Machine Learning, Reinforcement Learning, LLMs
Libraries: PyTorch, TensorFlow, NumPy, Pandas, scikit-learn, Matplotlib, Seaborn

Extracurricular Activities

Solvay Business Game Brussels, Belgium
Selected Participant *March. 2025*

- Collaborated on McKinsey's pitch challenge focusing on workforce strategy, developing innovative solutions for skill gaps and preparing the workforce for Industry 4.0.
- Conducted comprehensive financial modeling for the CACEIS challenge, analyzing break-even analysis for an incubation hub and creating performance projections that identified key growth opportunities.
- Participated in BDO's negotiation challenge, demonstrating strategic communication skills and successfully reaching win-win agreements in complex business scenarios.