Sharvil Oza

sharvil010@gmail.com | [Personal Website](#) | [LinkedIn](#)

EDUCATION

Dhirubhai Ambani Institute of Information and Communication Technology   Gandhinagar, India
Bachelor of Technology in Computer Science and Engineering   *Oct. 2022 – May 2026*

EXPERIENCE

Research Intern   December 2024 – Present
University of New South Wales, Business School   *Remote*
- Developing deep learning models for supply chain optimization, leveraging advanced algorithms to enhance forecasting accuracy and operational efficiency.
- Applying a variety of statistical techniques, including correlation analysis, VCF, and regression models, to derive insights and improve decision-making in supply chain management.
- Conducting crop yield prediction and optimizing supply chain processes using machine learning algorithms, aiming to improve resource allocation.

Research Intern   May 2024 – Aug 2024
Georgia Tech Financial Services Innovation Lab (FSIL)   *Remote*
- Developed and backtested quantitative trading strategies, including Pairs Trading and arbitrage, for equities, enhancing algorithmic decision-making and performance analysis.
- Strengthened the algorithm's robustness by designing a Risk Metric class encompassing over 25 risk metrics, and optimized portfolio allocations while comparing results against benchmark returns.
- Built a custom data wrapper for seamless integration with the Polygon API, enabling real-time data fetching and improving data processing efficiency for strategy development and backtesting.

PROJECTS

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.
- Engineered core trading functionalities by designing and implementing an L3 Order Book to manage real-time bid and ask prices for a set of stocks.
- Created efficient order-matching algorithms using a Queue Data Structure to ensure optimal performance and fast execution of trades in a highly dynamic market environment.

Investment Portfolio Optimization | *Python*   Jan. 2025 – Feb. 2025
- Developed a Modern Portfolio Theory (MPT)-based asset allocation model to optimize risk-adjusted returns, incorporating key financial metrics such as expected returns, volatility, and correlation of asset classes.
- Designed and implemented Monte Carlo simulations to assess portfolio risk by simulating thousands of potential market scenarios.
- Automated financial reporting processes, creating dynamic dashboards and reports for real-time performance tracking, risk analysis, and portfolio adjustments.

Quantitative Research Project | *Python*   Jan. 2025 – Feb. 2025
- Conducted in-depth analysis of emerging market inefficiencies, identifying pricing discrepancies, liquidity gaps, and structural market frictions across various asset classes, and developed cross-market arbitrage strategies to capitalize on these inefficiencies.
- Applied advanced statistical arbitrage techniques, such as cointegration, mean reversion, and pairs trading, to exploit short-term mispricings between correlated assets and generate alpha, enhancing risk-adjusted returns.
- Created a factor-based investment approach by integrating macroeconomic indicators, technical signals to systematically identify alpha-generating opportunities, while minimizing downside risk.

RAG Pipeline with Local LLM | *Python, PyTorch*   December 2024 – January 2025
- Developed a Retrieval-Augmented Generation (RAG) pipeline to preprocess PDF documents into text chunks, enabling efficient information retrieval and accurate context-based response generation.
- Integrated the local large language model (Google/GEMMA-2B-IT) to enhance the pipeline's ability to generate domain-specific, context-aware answers using external knowledge sources.

- Optimized the RAG pipeline's performance by refining data retrieval methods and improving response relevance and quality for real-world applications.

Reinforcement Learning-Based Drone Stabilization Simulation | *Python, PyBullet* October 2024 – December 2024
- Developed a physics-based drone simulation in PyBullet, where a drone initially starts upside down and utilizes Reinforcement Learning (RL) to autonomously stabilize and regain its upright position.
- Engineered a robust RL-based reward algorithm, enabling the drone to stabilize and hover autonomously by dynamically adjusting its control inputs based on real-time environmental feedback.
- Created a detailed URDF file for the drone model and enhanced the RL algorithm by optimizing the reward function, incorporating 13 state variables to improve the stability and performance of the drone.

Weather Prediction Model | *Python, TensorFlow*   August 2024 – September 2024
- Developed an advanced weather prediction model tailored for the tropical Indian climate, leveraging LSTM and Attention mechanisms to achieve an accuracy of over 90%.
- Collected, cleaned, and preprocessed large-scale weather datasets, constructing a robust data pipeline to seamlessly integrate with the predictive model.
- Successfully deployed the model in a production environment using Flask, enabling real-time predictions through API integration with curl requests for seamless user interaction.

TECHNICAL SKILLS

Languages: Rust, Python, C/C++, SQL (Postgres,MySQL),CUDA
Relevant Courses: GPU Architecture, Deep Learning, Computer Vision, Mathematical Finance, Corporate Strategy and Valuation, Reinforcement Learning
Finace Skills: Financial Modelling,Portfolio Management,Valuation,Quantitative Trading Strategies,MS Excel
Libraries: Pytorch,TensorFlow,Streamlit