Neelabh Verma

2rd Year Undergraduate
Architecture and Regional Planning
Indian Institute of Technology Kharagpur

neelabhv3@gmail.com
+91-7725805035
Linkedin

Academic Qualifications

Year	Degree/Certificate	Institute	CGPA/%
2022 - Present	B.Arch in Architecture and Regional Planning	Indian Institute of Technology, Kharagpur	8.7/10
2021	Class XII (CBSE)	Narayana Jr. College	93%
2019	Class X (CBSE)	Narayana Jr. College	90.3%

Key Projects

An Evolutionary Algorithmic Approach for Auto Alpha generation |Quant Club IIT Kharagpur *Aug 2023*

Developed a genetic algorithm framework for **Automated Alpha** generation using the **WorldQuant** platform API.

- Utilized diverse data fields such as **Price Volume Data for Equity,Risk 68**,**Growth Valuation Matrix** for alpha creation.
- Implemented the concept of **Elitism** within the algorithm to tackle bloating issues and simultaneously improve conversion rates.
- Attained a peak **Sharpe ratio of 4.02** and maximum Return of **80%** in the Universe of **US and Chinese Top 3000** equities.

Stock Buy/Sell and Hold predictions using Convolutional Neural Network *Aug 2023*

Incorporated a CNN model using 114 TA-Lib indicators for financial predictions, buy/sell/hold signals, with rigorous evaluation.

- Applied Feature Engineering, curating **81** financial metrics which helps in enhancing pattern recognition and accelerating learning
- Transformed 81 indicators to **9x9** image matrix and for class imbalance used **Synthetic Minority Oversampling Technique**
- Applied hyperparameter tunning for the CNN model, achieving **93.6%** accuracy in forecasting signals for Google stock.

Stock Price prediction using Time Series Analysis *May 2023 - June 2023*

Developed a Time Series analysis model for predicting Apple stock close prices using **Auto-Regressive Integrated Moving Average**

- Utilized **Moving Average** and **Standard Deviation** to eliminate trend and seasonality, enhancing data reliability for analysis
- Utilized the **Dickey-Fuller Test** to assess stationarity in the time series data, ensuring its suitability for modelling and prediction
- Utilized the three model parameters **(p,q,r)** to optimize the performance result in decrease in RMSE score to an impressive **2.5**

Sentimental Analysis of Tweets *Oct 2022 - Nov 2022*

Employed logistic regression for Twitter sentiment analysis using Natural Language Processing methods and NLTK

- Fine-tuned model hyperparameters and conducted feature selection to enhance the accuracy and precision of classification.
- Utilized sentiment-based word embeddings to provide insights into sentiment trends and the underlying emotional tone of tweets
- Outperformed sentiment classification **75%** with an accuracy rate of 89.67% within a dataset of 162,981 twitter tweets.

Exoplanet Habitability Prediction *Oct 2022 - Nov 2022*

Developed a Classification model on Planetary Habitability Laboratory Exoplanet Catalog to predict Habitability using 114 features

- Consolidated a feature-rich dataset using **MICE** Imputer for filling NaN values, **SMOTE** for class imbalance problems
- Applied **Permutation Importance**, **Random Forest** and **Extra tree** for reducing the dimensionality and complexity of data.
- Used **6** binary classification models and used **One-vs-all** classifier for multi-classification, results in an accuracy of **99.37%**

Internship

Research Consultant | WorldQuant LLC *Dec '23 - Present*

- Generated **10+ alphas** for **US** and **Chinese** equity markets based on time series analysis, outperforming benchmarks
- Tested alphas with **Sharpe Ratio** greater than **1.58**, **fitness** more than **1**, and **production correlation** less than **0.7**
- Ranked in the **top 5%** in **WorldQuant Challenge among** more than **30k participants** from all over the world

Research Internship | Charles Sturt University, Australia *Jan '23 - Present*

- Working under the **Professor Ashad Kabir** on medical data analysis using machine learning algorithms to uncover trends
- Our research paper focuses on using EEG signal data to train a model to detect various brain diseases, including seizures

Reseach Intership | National University of Singapore *Jan '23 - Present*

- Working under the **Professor Prasana Karthik Vairam** on the topic of Machine Unlearning for privacy and security.

Position Of Responsibility

Associate Quant Researcher | Quant Club | IIT Kharagpur *May '23 - Present*

- Actively taking on challenges and tasks involving **Algorithmic Trading** and **Finance** along with 17 other teammates
- Learning and building modern trading strategies using **Technical Indicators** on Python and **backtesting** on historical data
- Delving into **Financial** and **Statistical** domains to have deeper and sound understanding of Trading and Stock Markets

Technical Skills

- **Languages and Frameworks:** C, C++, Python, STL, NumPy, Pandas, Matplotlib, Sklearn, TensorFlow, Keras, PyTorch
- **Softwares and utilities:** Google Docs, Google Sheets, Excel, VS Code, Github, LaTex, AutoCAD, Solidworks, Ansys

Relevant Coursework

- **Mathematics and Computer Science:** Linear Algebra and Complex Analysis, Programming and Data Structures, Probability and Statistics, Transform Calculus, Advanced Calculus, Partial Differential Equations **MOOCs:** STATS 110, MIT OCW 6.042J
- **Machine Learning and Finance:** Machine Learning Foundation and Applications **MOOCs:** Stanford CS230 by Andrew Ng, Stanford CS231 by Fei Fei Li and Justin Johnson, Stanford CS224n by Christopher Manning, BMC, Zerodha Varsity