

ACHAL SHAH

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Education

New York University

September 2021 – May 2023

M.S. MANAGEMENT OF TECHNOLOGY

New York City

Coursework - Machine Learning in Financial Engineering (MLOps), Statistical Arbitrage, Financial Analysis for Tech Managers, Machine Learning in Business, Statistics for Data Analysts, Economics and Strategy, Operations Management

SRM Institute of Science and Technology

July 2016 – May 2020

B. TECH MECHATRONICS

Chennai, India

Experience

Global Algorithmic Institute

January - May 2023

Quantitative Finance Intern

New York City

- Created a Metadata from 5 different sources using fuzzy match on 17000 stocks to create metadata without discrepancies.
- Maintained Fundamental data of stocks from 5 indexes – S&P 500, Russell 3000, MSCI USA, MSCI USA ESG and MSCI ACWI using EOD historical data and by creating pandas DataFrame from nested dictionaries.
- Back tested ESG Signals on stocks in S&P 500 for short selling based on incoming news data.

Quantistix LLC

September - December 2022

Machine Learning Intern

New York City

- Machine Learning Research and Development for Credit Risk Modelling. Used CUDA to process big data. Used Univariate, Bivariate, Multivariate Analysis and SHAP for feature importance and engineering.
- Worked on interpretable, ethical models and created documentation.
- Conducted back-test of Hierarchical Risk Parity for portfolio allocation on Sustainable Securities using portfoliolab.

New York University

July - August 2022

Independent Study - Financial Machine Learning (Dr. Hassane Kone)

New York City

- Implemented Volatility based Long Short Trading Model Using Multi-Layered Perceptron Model.
- Used Fractional Differentiation to preserve both memory and stationarity and Combinational Purged Cross-Validation Method to generate multiple back test paths and avoid serial correlation as history may not depict future.
- The root mean squared error on average is 3.1 Percent between train and test set. The model is of similar significance on out of sample data predictions.

Projects

Coursework Projects

September 2021- May 2023

- Discounted Cash Flow Analysis of Mylan Lab's Proposed Merger with King Pharmaceutical.
- Conducted Micro-Economic Analysis of Invesco and made recommendations based on channel, investment strategy, products, and pricing.
- Project on Weekly Buy Sell (Long Short) signals for S&P 500. Used Fractional Differentiation to preserve both memory and stationarity, created additional features using ta-lib and pykalman and used stacked ensemble models (Adaboost and Catboost) for predictions. The f1 score, precision and recall on macro average is 60 Percent between train and test set. The web app was deployed on GCP.
- Performed Operations Analysis on IBM and recommended solutions based on process strategy, lean management, job design and supply chain.
- Capstone Project on modelling sustainable transportation operation for cost benefit and social impact with New York City Department of Design and Construction.

T5 Transformers for Indian News Summary

February 2023

- Developed a natural language processing project using T-5 Transformers to generate summaries of Indian news articles.
- Preprocessed a dataset to train it with the T-5 model to generate abstract summaries and got loss of 0.73 on last epoch.

Churn Prediction of Imbalanced Bank Data set using Deep Learning and SMOTE

March 2021

- Used Deep learning model with sigmoid activation and binary cross entropy for churn prediction.
- Improved f1-score of minority samples by 21 Percent using Synthetic Minority Oversampling Technique (SMOTE) which generates synthetic samples of minority class using K nearest neighbor algorithm and dropout regularization.

Technical Skills

Languages: Python (Object Oriented Programming, scikit-learn, TensorFlow, PyTorch, pandas, XGBoost, LightGBM, NumPy, Matplotlib, SciPy, keras, CUDA), SQL, R

Machine Learning: Regression Models and Deep Learning, Principal Component Analysis (PCA), Bagging, Cross-Validation, MLOps, Timeseries (NaturalLanguage Processing (NLP)), SHapley Additive exPlanations (SHAP), Kalman Filter, Explanatory Data Analysis (EDA), Feature Engineering, LangChain, LLMs

Tools: Amazon Web services (AWS), Google Cloud Platform (GCP), Git, Comet ML, Metaflow, Flask, Excel, Tableau