

Pratham Agarwala

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EDUCATION

Nanyang Technological University, Singapore

Aug 2020 – May 2024

Bachelor of Science Honours in Data Science and Artificial Intelligence

- Expected Honours (Distinction), Current CGPA: 4.45/5.00
- Minor in Finance/Business
- Relevant Modules: Probability and Statistics, Linear Algebra , Simulation Techniques in Finance, Data Science, Data Analysis with R, Neural Networks, Object Oriented Design and Programming, Databases, Business Finance, Accounting, Data Structures and Algorithms, Software Engineering, Communications

INTERESTS

Machine-Learning, Deep Learning and Neural Networks, Data Science and Analysis, Quantitative Finance/Trading, Statistical Machine Learning, Algorithmic Trading, Natural Language Processing, Decentralised Finance.

SKILLS

Languages: C, Python, Java, JavaScript, HTML, CSS

Libraries: NumPy, Pandas, Scikit-learn, SciPy, spaCy, NLTK, OpenCV

Visualization: Matplotlib, Seaborn, Plotly, Altair

DL Frameworks: TensorFlow, PyTorch

Databases: SQL, MySQL, MongoDB

Dashboard : Dash, RShiny

Version Control and Cloud: GitHub, AWS, Azure

Statistical Package: R, QuantStats

WORK EXPERIENCE

GIC

Jan 2023 – Present

Data Science Intern

- Conducted in-depth research to develop and enhance the current yield projection models for predicting Cash Flows, Drawdowns, and Distributions within Fund Indirect Investments.
- Engineered an all-inclusive interactive dashboard using Plotly Dash, offering comprehensive investment insights into Private Firms within the Technology and SaaS sector.
- Additionally, conducted NLP and Key-Purchasing-Criteria Analysis on App Reviews and Product Reviews to extract positive and negative aspects of the SaaS product compared to its competitors.

EastSpring Investments

May 2022 – Aug 2022

Summer Analyst – Investment

- Devised data pipeline and automation scripts using Python and PowerAutomate to automate process of data collection from data vendor and error checking.
- Built dashboard employing data visualising tool Python (Dash and Streamlit) for Factor Risk Models for Portfolios and identification of top Risk factors based on multiple filters by applying clustering and PCA on Portfolios and another dashboard for Counter-party Exposure with respect to credit Ratings.
- Researched on determining Variable Swing Factor to counter Large Fund Redemptions.

Etiqua Insurance (Maybank)

May 2021 – Aug 2021: Feb 2022 – Apr 2022 (part-time)

Data Science and Machine Learning Intern

- Deployed Deep Learning NLP and Computer Vision and simple Machine-Learning models using TensorFlow, Scikit-Learn and XGBoost for insurance claims, cross-sell products recommendations and filling missing values.
- Achieved an accuracy of 93% for Deep Learning Gender Imputation Model and deployed on firms ML pipeline.
- Developed Insurance Document Classifier with OpenCV feature extraction(ORB and SIFT) and Bayesian Classifier and achieved accuracy of 98%.
- Designed centralised Python(Streamlit Application) dashboard for studying model details and accuracy after each training iteration and running automatic training scripts in regular intervals to feed new data into system.

Gigabyte Inc

May 2020 – Jul 2020

Technical Intern

- Optimised Customer and Retailer Database Management database structure utilising SQL, resulting in increase in speed of SQL queries to extract data.
- Facilitated in maintenance of inventory, regional sales, and dealers/distributors database and carry out business analysis for sales in an area. Gained job and teamwork skills.

PROJECTS

Pricing and Analysis of Financial Derivative

Oct 2022 – Nov 2022

- Performed Derivative pricing and analysis on a Credit Suisse Derivative([link](#)) using Python.
- Simulate prices using Monte Carlo, Heston Model, CIR model, and Local volatility model with variance reduction techniques and estimated Greeks such as Delta and Gamma for the product.
- Performed back-testing on 3 months data for multiple rolling window data.

Fake News Detection using User-Preference aware GNNs

Sep 2022 – Oct 2022

- Created a cutting-edge user preference aware graph neural network based web application that uses an online article's URL as a starting point to forecast its authenticity and tracks its twitter propagation using the twitter propagation graph.
- At the Deep Learning Week 2022 Hackathon, the application was demonstrated and won for best NLP-based application.

Analysis of Bus Arrival Times using Video Data

Jan 2022 – May 2022

- Designed a Data Pipeline to detect buses from video data applying YOLOv5 model and clustering algorithms DBScan, Gaussian Mixture.
- Derived insights from data and reported results in an academic paper and presented findings at a conference and suggested methods to improve current bus service.

GoBikes - Plan bicycle trips using Rented Bicycles Mobile Application

Jan 2022 – May 2022

- Led a team in developing a mobile application enabling users to better utilise public bicycle services in Singapore by planning lending points and trips
- Utilised REST framework and Agile practices for Software Development.
- Prepared Django(Python) Backend and React Native Frontend.
- Deployed application on Amazon LightSail cloud service and secured backend APIs with JWT authentication

Crypto-currency Arbitrage Analysis (Advisor : Dr Sourav Sen Gupta, NTU)

Jun 2021 – Aug 2021

- Studied Arbitrage opportunities between 8 Crypto-currencies and 5 crypto-exchanges
- Implemented graphing algorithms and Bellman Ford Algorithm detected negative cycles among various combinations of Currencies and exchanges. Visualized detailed Time Series analysis and plots to detect anomalies in price of crypto-currency.

HR Analysis - Attrition and Performance Rating Prediction

April 2021 – May 2021

- Identified patterns in Attrition and predict Performance Rating applying Classification models from SKLEARN and library on dataset from Kaggle published by IBM data scientist
- Performed EDA and PCA for Monthly Income of employees and visualized with help of Plotly library to find out type of employees most likely to attire.

CO-CURRICULAR ACTIVITIES

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| • Project Leader NTU Quantitative Asset Management Club | Aug 2022 – Current |
| • Member Investment Banking Club | Aug 2022 – Current |
| • Research Member for the MLDA@EEE Club | Aug 2021 – Apr 2022 |
| • Marketing and Design Officer for IEEE club at NTU | Aug 2021 – Apr 2022 |
| • IT Sub-Committee Officer School of Computer science and Engineering club | Aug 2021 – Apr 2022 |