Jack

I left out my personal contact information

As a highly skilled and knowledgeable aspiring FinTech professional, I possess expertise in machine learning, blockchain, financial engineering, and financial markets. I enjoy a unique blend of skills that can bring a fresh view of the finance industry. My aptitude for programming enables me to develop end-to-end solutions for complex problems. With my education in Financial Technology, I can analyse financial derivatives, develop models, and ultimately cojoin technology and finance. Throughout my experiences, I have demonstrated collaboration and critical thinking, making me an asset to any team.

EDUCATION

University of Gloucestershire, Gloucester, UK   **September 2022 – June 2023**
Financial Technology MSc | Distinction
Relevant modules: Artificial Intelligence, Blockchain and Applications, Financial Engineering, Foundations of Financial Technology, Financial Markets and Regulations
Final Project: *An Application of Machine Learning in the Classification of Credit Risk Applicants and its Comparison to Traditional Classification Methods*

University of Gloucestershire, Gloucester, UK   **September 2019 - June 2022**
Sports Strength and Conditioning BSc (Hons) | 1st Class Honours
Relevant modules: Research Design & Analysis, Scientific Enquiry, Monitoring & Data use in Sport

PROJECTS

Artificial Neural Network for Credit Applicant Classification   [Repository]
- Developed a machine learning neural network to predict credit default risk with a 92.1% accuracy and a 1.35% false positive rate, which is significantly better than traditional models.
- Preprocessed data by removing NaNs, encoding categorial string features, and balancing the dataset before scaling the data to improve model training performance.
- Implemented a hyperparameter-tuned TensorFlow neural network alongside a Sci-kit learn Logistic Regression and Linear Discriminant Analysis model for comparison.
- Evaluated the models' performance using accuracy, precision, recall, AUC-score, and false positive rates.
- Deployed the model using FastAPI with MLFlow to track model versions and check feature drift.
- Utilised SHapley Additive exPlanations (SHAP) to interpret the results of the neural network to add explain ability to the results.

Unsupervised Auto Encoders for Credit Card Fraud   [Repository]
- Created an Auto Encoder model to detect anomalous credit card transactions to detect fraud with 97.6% accuracy.
- Preprocessed the data, by checking principal components for NaNs, before splitting the dataset into a train/test spit.
- Implemented regularisation techniques for training and fitting to reduce the chances of overfitting.
- Evaluated the model using precision and ROC curve alongside visualising the results with a confusion matrix.

Interactive Web Application of Financial Markets   [Repository]
- Generated a web application to display and forecast real time financial data.
- Created multiple frontend landing pages within the application allowing for the analysis of real-time price and volume data of publicly traded equities, bonds, and derivatives.

- Followed the software development lifecycle by designing, and producing a full-stack interactive web application to enable the easy real-time analysis of financial market data which included the ability to dynamically change time series plots.
- Utilised Prophet to generate an interactive stock price forecasting page.
- Included a web scraper that leveraged free APIs to collect the latest frequency of mentions of stocks on the website Reddit.com.

LSTM Model for the Forecasting of Stock Data   [Repository](#)
- Built a Long Short-Term Memory (LSTM) neural network with TensorFlow to forecast stock price data.
- Preprocessed the data by removing NaNs and scaling the dataset.
- Split the time series data into X and Y features to enable supervised learning.
- Designed a hyperparameter-tuned LSTM model that incorporated regularisation techniques to reduce the chances of overfitting.
- Trained the model using historical data and evaluated using mean absolute error and root mean squared error metrics.
- Developed an in-class method to enable the automatic calculation, storage, and presentation of predicted future data points empowering easy analysis of predicted future information.

WORK EXPERIENCE

University of Gloucestershire, Gloucester   **December 2022 – Present**
Post-Graduate Teaching Assistant
- Prepared and completed taught lessons for both undergraduate and post-graduate students covering Python, machine learning, and Microsoft Excel ultimately aiming to expand their understanding of Financial Technology.
- Created presentations that kept students engaged throughout lessons, with keen detail being paid to the quantity and quality of information being displayed per slide.
- Researched interactive tasks to enable students to understand how technology can enable better financial decision-making, alongside furthering their knowledge and application of Python and Excel.
  Skills Learnt: Python, Machine Learning, Presentations, Public Speaking, Environment Setup, Excel

LEADERSHIP & ACTIVITY

University of Gloucestershire   **September 2019 – June 2020, September 2022 – Present**
Course Student Representative
University of Gloucestershire   **September 2019 – Present**
Men's Rugby Union

SKILLS & INTERESTS

Languages: Python, C#, SQL	**MLOps:** MLFlow, FastAPI
Packages: Scikit-Learn, TensorFlow, Keras, Prophet, NumPy, Pandas, Matplotlib, Plotly, SQLAlchemy	**Technical:** CI/CD, Git & GitHub **Miscellaneous:** IBM SPSS, Research Design **Interests:** Rugby, Golf, Formula 1, Personal Fitness