SHAIK ASAADUDDIN KHWAJA

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EDUCATION

University of Cambridge, United Kingdom *Oct 2021 - Jun 2024*

Bachelor of Arts (Hons) in Natural Sciences - Physics

- Relevant Coursework: Linear Algebra, Computational Physics, Statistics, Mathematical Methods

TECHNICAL SKILLS

Programming Languages: Python, SQL, JavaScript, LaTeX, Markdown, VBA, PowerShell

Libraries, Frameworks, & Tools: Numpy, Pandas, Scikit-learn, Transformers (Huggingface), Flask, Dbt, Cloud Services (*AWS*: Bedrock, API Gateway, *Google*: Google Maps Platform)

Certifications: ML Specialisation - DeepLearning.AI/Stanford University

WORK EXPERIENCE

Undergraduate Research Intern *Jun 2023 - Sep 2023*

Cavendish Laboratory: Department of Physics, University of Cambridge, United Kingdom

- Refined the department's experimental physics teaching resources, conceptualizing 2 new projects and implementing improvements in 3 existing projects
- Developed 2 new Python demonstrations and re-factored 2 existing demonstrations, doubling the extent of current physics demonstrations, to effectively explain and demonstrate concepts such as Fast Fourier Transforms and Diffraction
- Conducted thorough data analysis of 3 existing experiments to identify over 4 previously undocumented sources of error and devised modifications to fix these errors

Software Engineer Intern *Aug 2022 - Sep 2022*

Cow Town, United Kingdom

- Implemented Google Maps APIs with Python as part of a startup's proof-of-concept carpooling app to generate optimal meeting points for drivers and passengers; obtained an approximately 2 times speedup over the existing manual matching process
- Formulated different methodologies for matching passengers and drivers to minimise the cost of making API requests, reducing the number of API calls by about 20%

PROJECTS

Options Pricing Using Monte-Carlo and Black-Scholes Model

- Developed and implemented the Monte Carlo and Black-Scholes models for pricing European options in Python, leveraging implied volatility data to compare model predictions with actual market prices of AAPL equity options
- Optimised the Monte Carlo simulation using NumPy vectorisation, obtaining about a factor of 10 decrease in simulation time
- Analyzed the volatility smile of AAPL options and compared it against theoretical expectations

Binary Prediction of Poisonous Mushrooms

- Cleaned and set up pre-processing pipelines using Scikit-Learn for a Kaggle competition dataset containing 21 categorical and numerical features for poisonous and edible mushrooms
- Trained and evaluated Logistic Regression and Decision Tree models using cross-validation, obtaining a public MCC score of 0.96 with the Decision Tree model for the binary classification of edible and poisonous mushrooms on test data

A Custom ChatGPT Chatbot That Provides Employment-Related Legal Assistance

- Utilised curated legal data, few-shot prompting, and prompt engineering to develop a chatbot that can ask legally relevant follow-up questions to the user before suggesting potential legal claims the user has grounds for

LEADERSHIP

Co-President, Cambridge University Scientific Society *May 2023 - Apr 2024*

- Directed the planning and publicity of over 10 social and academic events annually, including the annual Garden Party which was held in collaboration with 4 other societies and attended by about 90 guests
- Successfully secured and hosted eminent scientists as speakers, including Nobel laureates and leading researchers for the Society's weekly talks which attract up to 100 attendees
- Revamped the Society's sponsorship strategy generating over £300 in financial backing to support the Society's goals

Safety Officer, St Edmund's College Boat Club *Oct 2022 - Jun 2023*

- Supervised all technical and organisational safety compliance matters related to the operation of the boat club ensuring the successful completion of British Rowing's annual safety audit