ROYDON TAY

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EDUCATION

National University of Singapore **Aug 2023 - Present**
Bachelor of Science | GPA: 4.69

- Major: Data Science and Analytics | Minor: Computer Science
- Relevant Coursework: Artificial Intelligence: Technology and Impact (machine learning), Mathematical Statistics, Data Structures and Algorithms, Data Visualisation, Programming Methodology

SKILLS

- Python, Java, R, SQL, Git and GitHub, Docker, Snowflake, Azure, AWS, Postman, JMeter
- Machine learning and Deep Learning: Scikit-learn, PyTorch, Keras, Hugging Face
- LLM Ops: Ragas, Langchain, OpenAI Agents SDK, Azure OpenAI Service
- Data Visualization: Tableau, Matplotlib, Seaborn
- Good understanding of DevOps, Agile methodology, Load Testing and Unit Testing

WORK EXPERIENCE

Synapxe, AI Engineer Intern **Dec 2024 – Present**

- Part of the backend development team building an LLM Conversational Assistant using Azure OpenAI for the HealthHub website, with voice input, translation and speech-to-text capabilities
- Conducted exploration and implementation of an Agentic Workflow POC using OpenAI Agents SDK, documented and shared processes with members of the team
- Designed and developed API endpoints and unit tests. Responsible for managing the project's staging environment, conducting code reviews, application testing prior to deployments and promoting software development best practices within the team

PSA BDP, Data Science Intern **May 2024 – Aug 2024**

- Spearheaded the research and development of an innovative application of LLM Retrieval Augmented Generation for Harmonized Tariff System classification of products, surpassing previous method's accuracy of 60%, achieving up to 95% accuracy. Documented data ingestion and search index optimisation processes for on-boarding future clients
- Successfully integrated reranker transformers to enhance the accuracy of similarity retrieval, and dynamic few-shot prompting to boost performance
- Identified major roadblocks affecting classification accuracy, such as data quality and input consistency, and provided actionable steps to improve performance

PERSONAL PROJECTS

YOLO Pull Up Counter

- Developed a video analytics inference pipeline leveraging YOLO11 for pose estimation and object detection to accurately count pull-ups from video footage
- Fine-tuned YOLO11 using the Ultralytics package to detect pull-up bars in video frames and integrated OpenCV to implement pull-up counting logic
- Curated and augmented a dataset using RoboFlow, applying strategic data augmentations to enhance YOLO model training and performance

Movie Review Sentiment Analysis

- Utilised PyTorch to finetune a pre-trained DistillBERT language model with a classification head for sentiment classification of movie reviews**.** Enabled real-time monitoring of model training by visualising model performance with TensorBoard

- Implemented Bayesian optimisation for hyperparameter tuning of neural network**.** Final neural network model achieved accuracy of 93%, outperforming benchmarks achieved by statistical machine learning models in past studies by up to 5%
- Crafted report explaining data processing and modelling methods, sharing results obtained from experiments

SG Property Price Prediction

- Trained a Random Forest model that predicts property prices based on input features such as location and floor area, hosted deployed model on a Streamlit Web Application
- Performed exploratory data analysis, data cleaning and feature engineering on dataset acquired from URA's API containing over 100,000 private residential property transactions
- Experimented with different data processing methods and machine learning models, reducing mean absolute error by over 80% as compared to baseline model

CO-CURRICULAR ACTIVITIES

Workshops Executive, NUS Statistics and Data Science Society **Aug 2023 - Present**

- Conducted introductory workshops for fellow students sharing data science concepts and skills, such as SQL, Machine Learning workflows and exploratory data analysis. Designed course materials such as slides, code notebooks and code along activities
- Delivered a lecture about Statistical Significance Testing and Linear Regression for the NUS Special Program in Science