Nithusikan Thasavaran

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Profile

Final-year Computer Engineering undergraduate passionate about AI, Machine Learning, and Data Science. Experienced in NLP research, applied deep learning and software development. Proven ability to lead technical projects and deliver scalable solutions. Eager to apply data-driven approaches to real-world challenges.

Education

University of Peradeniya, Sri Lanka — **2021 March - present**
BScEngHons specializing in Computer Engineering — *3.50/4.00 CGPA*

Jaffna Hindu College, Sri Lanka — **2011 - 2019**
G.C.E Advanced Level Examination — Results - 3A — *2.1369 Z-Score*

Experience

LIRNEasia — Colombo, Sri Lanka
Data Science Intern — Jul 2024 – Jan 2025

- Led a dedicated workstream in a flagship NLP project under the mentorship of a Senior Data Scientist and Research Fellow, developing machine learning models to predict and analyze tweet virality over time, achieving a balanced trade-off between precision and recall in viral tweet detection.
- Engineered features from tweet content and metadata, utilizing Python libraries (pandas, scikit-learn, NLTK, spaCy) for data preprocessing, FastText, Word2Vec, TF-IDF vectorization, and sentiment analysis with VADER.
- Designed and implemented a modular command-line tool to automate the end-to-end pipeline for data cleaning, feature engineering, model training, and evaluation, enhancing reproducibility and scalability.
- Conducted hashtag analysis using NetworkX, fuzzywuzzy, and clustering techniques (Louvain, Spectral) to identify thematic patterns, visualized via Plotly and Neo4j Desktop for actionable insights into social media trends.
- **Tech Stack: Python, pandas, scikit-learn, NLTK, spaCy, FastText, Word2Vec, BERTopic, TF-IDF, VADER, NetworkX, fuzzywuzzy, Louvain, Spectral Clustering, Plotly, Neo4j Desktop, Neo4j Graph Database**

Projects

1.A Cross-Layer Cyberattack Detection Framework: Group — 2025 Mar - Present

- Our final year project which is expected to develop an end to end pipeline to effectively identify known and unknown cyber attacks by analyzing Network traffic and flagging the potentially affected components through Application layer logs.
- **Contributions:**
  - Engineered the solution architecture by coordinating with my team mates and referring to existing research papers.
  - Handled the entire Network layer analysis and trained necessary ML models to meet our requirements.
  - Developed the attack detection pipeline of Network layer traffic.
- **Tech Stack: Python, Pandas, Scikit- learn, Matplotlib, Seaborn, Numpy, PyTorch**

2.ML Based Forecasting of inpatient bed demand: Group — 2023 Nov - 2024 Apr

- A ML powered application is being developed to forecast inpatient bed demand, aiming to enhance hospital accessibility, reduce wait times, improve quality of care, and boost satisfaction among both patients, employees and management.
- **Contributions:**
  - Played a key role in training various models and evaluating the accuracy of the forecasting.
  - Led the data analysis phase using PowerBI during preprocessing.
- **Tech Stack: Python, Pandas, Scikit- learn, Matplotlib, Seaborn, Numpy, PowerBI, TensorFlow**

3.Vehicle Number Plate Recognition System: Individual — 2024 Apr - Present

- Developed an advanced application to detect vehicles and automatically recognize number plates in real-time.
- Designed and implemented a comprehensive computer vision pipeline for Automatic Number Plate Recognition (ANPR):
  - Utilized the YOLOv8 deep learning model for precise and real-time vehicle detection.
  - Integrated EasyOCR library for high-accuracy character recognition from detected license plates.
- **Tech Stack: Python, (YOLOv8, EasyOCR), OpenCV**

4. Customer Support Chatbot: Individual — 2024 Apr - Present

- Developing an intelligent customer support chatbot by fine-tuning Llama-3 with Retrieval-Augmented Generation (RAG) using the Bitext-customer-support-llm-chatbot-training-dataset from **Hugging Face** to deliver exceptional customer service.
- **Contributions:**
  - Fine-tuned the Llama-3 (4 - bit quantized) model using the documentation and Unsloth repository.
  - Implemented the RAG pipeline using ChromaDB and LangChain.
- **Tech Stack: Python, Llama-3, PyTorch, ChromaDB, LangChain**.

5. Automated Hydroponics System: Group — 2023 Nov - 2024 Jan

- An IoT-based hydroponics system integrated with web and mobile applications for real-time monitoring, control of system conditions, and resource management.
- **Contributions:**
  - Implemented of AWS connectivity between the backend application and physical IoT system using Spring Boot and AWS IoT Core with **MQTT** protocol.
  - Developed the backend application for for both mobile and web application using with **JWT** token for protection.
- **Tech Stack: Spring Boot(Java), React.js, AWS IoT Core, MySQL**

Technical Skills

Languages: Python, Java, C, JavaScript, SQL, Verilog HDL
Frame Works: LangChain, SpringBoot, React.js, Electron.js, HTML, CSS, Bootstrap
Clouds & Databases: AWS - IoT Core, MySQL, MongoDB, Neo4j
Tools & Libraries: Pandas, PySpark, TensorFlow, PyTorch, PowerBI, Postman

Certifications

- Supervised Machine Learning: Regression and Classification
- Advanced Learning Algorithms
- Unsupervised Learning, Recommenders, Reinforcement Learning
- Introduction to Linux

Achievements

- ACES - Hackfest - 2023 **Winners** of the sustainable development category
- ACES - Coders V10.0 **Final round participants**

References

Prof. Roshan G. Ragel, Dept. of Computer Engineering, University of Peradeniya,roshanr@eng.pdn.ac.lk
Dr. Isuru Nawinne, Dept. of Computer Engineering, University of Peradeniya,isurunawinne@eng.pdn.ac.lk