Machine learning Engineer / Fullstack Developer

R.M.N.N.Rathnayaka

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PROFESSIONAL SUMMARY

- Passionate and motivated Computer Science undergraduate aiming to become a skilled **Machine Learning Engineer** and **Full-Stack Developer**. Equipped with strong programming fundamentals, cloud knowledge, and hands-on experience in both AI and web development. Eager to build intelligent, scalable applications that solve real-world problems. Actively seeking opportunities to grow through collaborative projects, internships, and continuous learning.

SKILLS

- **Programming Languages:** Python, Java, JavaScript, HTML, CSS, PHP
- **Maching learning:** Scikit-learn ,TensorFlow,Pandas,NumPy,Decission Trees ,LLMs
- **Libraries/Frameworks:** Pandas, React
- **Tools & Platforms:** Git, Docker (learning), Azure (basics)
- **Concepts:** Cloud Computing, Data Analysis, Problem Solving
- **Databases :** MySQL,MongoDB ,ThromaDB
- **Cloud & CI/CD:**Azure ,Github Actions , MLflow

EXPERIENCE - Freelance Fullstack Developer(2024/02/10 - Present)

Dementia Risk Prediction Model

- Developed a binary classification model achieving 94.19% ROC-AUC for dementia prediction using 195,196 clinical records from the NACC dataset with minimal overfitting (0.56% gap).
- Implemented comprehensive ML pipeline across 5 Jupyter notebooks covering data cleaning, feature engineering (18 derived features), and model training with XGBoost, Random Forest, and Logistic Regression.
- Conducted rigorous validation using 5-fold cross-validation and eliminated data leakage through systematic removal of diagnosis-related features, achieving 90.16% accuracy with 83.27% F1-score.
- Technologies: python,XGboost,Scikit-Learn,Pandas,Numpy,Matplotlib

Exoplanet Discovery using Kepler Data (Machine Learning + Streamlit)

- Developed a binary classification model using XGBoost to predict exoplanet candidates from NASA Kepler telescope data, distinguishing real exoplanets from false positives using 15 astrophysical features including orbital period, transit depth, and stellar properties.
- Built an interactive Streamlit web application enabling real-time exoplanet probability predictions with SHAP explainability integration for interpretable feature impact visualization and scientific analysis.
- Implemented comprehensive data preprocessing pipeline with scientific scaling and validation using ROC-AUC and PR-AUC metrics on the Kepler Objects of Interest (KOI) catalog dataset.
- Technologies: python,XGboost,Scikit-Learn,Pandas,Numpy

NASA Hybrid RAG System with Tool Calling

- Developed an advanced Retrieval-Augmented Generation (RAG) system combining vector search (ChromaDB) and keyword search (BM25) for semantic and lexical retrieval of NASA technical documents, achieving enhanced accuracy through reciprocal rank fusion.
- Implemented AI agent with tool calling capabilities using LangChain, integrating 6+ NASA APIs (APOD, Mars Rover, NEO, EPIC) for real-time space data access alongside historical knowledge base queries.

- Deployed interactive chatbot interface using Streamlit frontend and FastAPI backend, containerized with Docker for scalable deployment on AWS Elastic Beanstalk.
- Technologies: python,Langchain , ChromaDB,OpenAI,Sentence Transfomers,Fast API ,Docker

Cricket Toss Analysis & Win Prediction System - Sri Lankan Grounds

- Developed a comprehensive cricket analytics platform analyzing 500+ matches across 7 Sri Lankan cricket grounds, combining toss decisions, player performance, and weather data to predict match outcomes with 75%+ accuracy and winning scores (MAE < 20 runs).
- Built machine learning pipeline using XGBoost and Random Forest for three predictive models: optimal toss decision classifier, match winner predictor (ROC-AUC 0.80+), and score regression model, with feature engineering incorporating ground characteristics, team form, and meteorological data.
- Deployed interactive Streamlit dashboard and FastAPI backend with Docker containerization on AWS, enabling real-time predictions and ground-specific insights with weather API integration (OpenWeatherMap) for live condition analysis.
- Technologies: python,XGboost,Scikit-Learn,Pandas,Numpy,Matplotlib ,Streamlit ,Plotly,FastAPI ,Docker ,OpenWeatherMap API

React E-Commerce Website

- Developed a responsive online store using React. Integrated shopping cart, product filtering, and responsive design for mobile and desktop users.
- Technologies: React , Css ,Javascript , Php

LICENCES AND CERTIFICATIONS

- Microsoft Azure AI-900
- Python – University of Moratuwa
- LinkedIn Learning – Python and Java
- Deep Learning With Python(LinkedIn Learning)
- Machine Learning (Self-paced course)
- AI Engineer-StemLink
- Apache DAG Airflow3
- LangGraph Essential – Python
- NASA Space Appse Challenge : Hunting for Exoplanets with AI

EDUCATION

- University of Westminster BSc(Hons) in Computer Science 2025 – 2028 (Expected)
- GCE Advanced level in Maths stream (completed)

REFERENCES

- Hansindu Maniyangama
  GRC (Governance, Risk & Compliance) Analyst,
  Wiley Global Technology Pvt(Ltd)
  Email: hansinduminod26@gmail.com

- Tharushika Dilshan
  Ai /ML engineer
  Inteli-Gen AI Pvt(Ltd)
  Email: Tharushika280@gmail.com