



MUZNY ZUHAI

Data Scientist with expertise in full-stack development, signal processing, computer vision, LLM, and NLP. Demonstrated success in building and deploying enterprise-level machine learning models using robust pipelines, with proficiency in TensorFlow, PyTorch, OpenAI APIs, Snowflake, and AWS ML tools. Strong collaborative and team-oriented approach. Quick learner committed to improving processes through the application of AI.



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CERTIFICATIONS

- DeepLearning.AI- LangChain for LLM Application Development, ChatGPT Prompt Engineering for Developers
- Coursera - Reinforcement Learning Specialization University of Alberta
- Coursera - ML Specialization by DeepLearning.AI
- Coursera - Deep Learning Specialization by DeepLearning.AI | Andrew NG
- Coursera - MLOps Specialization by DeepLearning.AI

SKILLS

- Mathematics and Statistics
- Python, C++ with OOP concepts
- SQL and NO SQL
- MATLAB and Simulink Coding
- Machine & Deep Learning AWS
- Cloud Computing Tensorflow,
- ReactJS, Redux
- Pytorch, OpenCV Numpy,
- Matplotlib, Pandas
- Image Processing & Segmentation
- Digital Signal Processing and Denoising
- MLflow, AWS Sagemaker, Azure ML
- FastAPI, Hugging Face, RAG NLP and Text Embeddings
- MongoDB, MySQL
- OpenAI GYM
- GPT-4, Bard API
- Canvas JS, AM Charts
- GitLab,

EDUCATION

BSc. (Hons) in Electrical and Information Engineering
SPECIALIZED IN ELECTRONICS AND SOFTWARE ENGINEERING
UNIVERSITY OF RUHUNA

2019 FEB - 2023 SEP (3.4 CGPA - 7th Sem)

ZAHIRA COLLEGE MAWANELLA G.C.E 2017 A/L . RESULTS A,B,B

EXPERIENCE

Data Scientist (intern) | Dialog Axiata PLC | MAY 2023 - Present (6 MONTHS)

- Responsible for a project for optimizing notification delivery for a 20 million customer base using reinforcement learning
- clustering the customers into segments, collecting customer campaign details from Snowflake databases
- offline training and initial Q-Learning RL model using AWS Sagemaker
- Evaluate the model using an A/B test with the existing Deep learning system
- implemented Python modules and Snowflake stored procedures for clustering, data collection, offline and online learning, notification delivery, and monitoring.

Skills: Deep Q Networks, Snowflake Stored Procedures, S3 buckets, SageMaker, Agile

Finalist Veracity OpenAI Challenge | Team Leader | Nov 2023 - Ongoing

- one of the top 7 teams. Inbuilt an IKMS for efficient Information retrieval from a PDF
- Use Langchain for text splitting and built vector spaces RAG and finetuning LLMs for open-source models
- Use OpenAI GPT-4 API to Generate Responses for Prompts,
- **Skills: MATLAB, Digital Signal Processing, Arduino, Medical Imaging**

Full-stack Developer at Blocks-Stars (PVT Ltd) March 2021 - August 2021

- MERN stack for Crypto/NFT platforms, gambling sites, and an email signature generator.
- Integrating AM Charts, Canvas JS, MongoDB, and React for dynamic visualizations and tools.
- Managing version control with GitLab and ensuring continuous deployment on AWS.

Skills: MERN, Blockchain, Socket Connection, Data Analysis, Data Visualization, GitLab, AWS

Research Assistant Engineer | Faculty of Engineering, University of Ruhuna | July 2022 - Present

- Research on BCI EEG-controlled FES for stroke rehabilitation.
- Data Collection: Dry EEG & EMG data for 60 clinical trials.
- Pre and Post EMG, EEG Medical Image Analysis, with filtering and Feature Engineering.
- Apply SVM Algorithm for predicting human action and receive high accuracies,

Skills: MATLAB, Digital Signal Processing, Arduino, Medical Imaging

Student Instructor Faculty of Engineering (Dec 2022 - Oct - 2023)

- Conduct and Evaluate Laboratory sessions for 3rd Semester undergraduates of the Department of Electrical & Information Engineering.

Skills: Practical, Teaching, Evaluating

- Mobile Application development
- Socket Connections
- Critical thinking
- problem-solving
- Teamwork

Language Skills

- English | Highly Proficient
- Tamil | Native
- Sinhala | Proficient

EXTRA CARRICULAR

President IET On-Campus University of Ruhuna

- Organized the Innovission the AI workshop series by collaborating with top AI companies in Sri Lanka
- initiated the full-stack workshop series on campus
- conducted a tree plantation program

Vice President Ruhuna Engineering Gavel Club

- Organized Speech Marathon, Induction Series 21/22, and Joint Meetings.
- Delivered several speeches and evaluated 10 speeches.
- Served as Meeting Coordinator for 20/21.

Volunteer teacher for physics and mathematics

- Organized Speech Marathon, Induction Series 21/22, and Joint Meetings. Delivered and evaluated speeches, and served as Meeting Coordinator for 20/21.

Referees

Dinuka Samarakoon | Intern Supervisor

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Noeline W. Prins, Ph.D. | Research Supervisor

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PROJECTS

Optimizing Notification Delivery Using Reinforcement Learning

- Segmented a 20 million customer base into 30+ clusters using usage patterns, demographics, and features.
- Gathered 36-month campaign details from Snowflake databases.
- Established an environment, built an agent, and designed a reward system for offline Q-learning training.
- Evaluated model performance with hyperparameter-tuned models.
- Integrated model outcomes into the delivery pipeline, covering reward collection, model updating, and monitoring. - **(Article)**

Skills -Clustering, RL, Snowflake procedures, ML pipeline,SageMaker Pipelines(

Integrated Knowledge Management system using Langchain and GPT 4 - (medium, code)

- Build a Streamlit and Langchain-based chat application that takes multiple PDFs and processes and replies to the prints based on the PDF data
- store the data in chunks of embedded vectors in a vector store chromed
- user prompts and embedding to the words, similarity search from vector db

Skills - LangChain, Vector Databases(ChromaDB), OpenAI,PaLM2, Streamlight

Adaptive System Cue System Using Edge ML for Gait Improvement in Patients with Parkinson's Disease

- Designed hardware and software for three-part leg data acquisition. (code)
- Conducted time series data analysis, and implemented data cleaning for Feature Engineering. Developed ML & DL models classifying gait into six categories, hosted on Arduino BLE Sense 33. (code)
- Created a patient performance monitoring system with Flask API, CanvasJS, and ReactJS.
- Implemented adaptive cues (Auditory, Visual, Tactile) based on ML predictions.

Skills - Edge ML, Arduino BLE Sense 33, CNN, RNN, LSTM, DT, Flask

Improvement of Early Detection of Parkinson's Disease Using Machine Learning

- Developed a novel system predicting early Parkinson's using Handwriting, Voice, and gait data.
- Hosted a mobile app with JS and Flask API to collect regular data.
- Utilized transfer learning with VGG16 feature extraction, achieving a 98% accuracy in a multi-modal pipeline for predicting early Parkinson's.

Skills - MERN, CNN, DT, LSTM, SVM

Human Activity Recognition with Smartphones

- Created ML models for human activity prediction using smartphone sensor data.
- Preprocessed accelerometer and gyroscope data.
- Applied SVM and random forest algorithms for classification in practical activity recognition.

Skills - TimeSeries data, LSTM, Data Preprocessing, Backend development

Generating Interactive Music Using Image Features

- Processed Images and Extracted Features using effective fracture extraction methods.
- Extracted Features were converted to HSV Scale.
- The values were mapped to a range of piano keys.
- Added octaves and Variations to create better music.

Skills -Object detection, Image classification and segmentation

Local Vegetable Market Application

- Developed a MERN stack supermarket app for seamless user shopping with browsing, ordering, and payment features.

Skills - MERN Full Stack Development, OOP, DSA, API Development