Eshan Surendra

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Summary

As a second-year electronic and telecommunication engineering undergraduate, I am determined to work hard to seize any opportunity to make the most of it. I'm passionate about exploring the worlds of machine learning and deep learning, applying them to real world scenarios.
Areas of Interest: Machine Learning, Artificial Intelligence, Deep Learning, Natural Language Processing, Computer Vision, TinyML

Education

University of Moratuwa — Moratuwa, Sri Lanka
B.Sc. Engineering(Hons.) in Electronic and Telecommunication Engineering; GPA: 3.68/4.0 — *March 2022 - Present*

Richmond College — Galle, Sri Lanka
GCE Advanced Level - Physical Science Stream; Z-Score 2.4492 — *Mar 2018 - Dec 2020*
- *Combined Mathematics, Physics, Chemistry*

Online

Advanced Learning Algorithms (DeepLearning.AI)	*Jan 2023 - Feb 2024*
Supervised Machine Learning: Regression and Classification (DeepLearning.AI)	*Nov 2023 - Jan 2024*
Generative AI: Introduction and Applications (IBM)	*Jan 2024 - Feb 2024*
Introduction to TensorFlow (DeepLearning.AI)	*Apr 2024 - May 2024*
Intro to Machine Learning (Kaggle)	*Apr 2024 - May 2024*
Computer Vision (Kaggle)	*Apr 2024 - May 2024*
Microsoft Azure Machine Learning (Microsoft)	*Dec 2023 - Jan 2024*
Introduction to Embedded Machine Learning (Edge Impulse)	*Aug 2023 - Sep 2023*
Calculus for Machine Learning and Data Science (DeepLearning.AI)	*Dec 2024 - Feb 2024*
Linear Algebra for Machine Learning and Data Science (DeepLearning.AI)	*Dec 2024 - Feb 2024*
Introduction to Git and GitHub (Google)	*Sep 2023 - Feb 2024*
Crash Course on Python (Google)	*Nov 2023 - Dec 2023*

Awards and Scholarships

Selected for Top 6 entries | AURORA - 2024 (AI IDEATHON) — *Ongoing*

Implementation of a Criminal Face Sketch Generator using Generative AI project Selected from University Competition

Selected for Top 30 entries | IEEE IES Generative AI Challenge - 2024 — *Ongoing*

Implementation of a Criminal Face Sketch Generator using Generative AI project Selected Out of **150** International teams

Finalist | IEEE ComSoc - ComFix 2024 — *Ongoing*

Working on a sollution with addressing Bandwidth Constraints in Underwater Acoustic Communication

Mahapola Higher Education (Merit) Scholarship — *Aug 2022*

For outstanding performance in GCE A/L Examination All Island Rank 204

Projects

Criminal Face Sketcher using Generative AI — *Ongoing*
- Development of a Criminal Face Sketch Generator using Generative AI
- Generate accurate facial sketches and variations for Streamlining investigations and forensics.
- Used LLMs, PyTorch, Stable Diffusion models, Hugging Face Transformers, ONNX as tools to develop.

Cell Anomaly Detection using Autoencoders — *Mar 2024*
- Develped an anomaly detection system using autoencoder neural networks
- Applied insights from the paper "Robust Anomaly Detection in Images using Adversarial Autoencoders" by Laura Beggel.

Handwritten digit classifier — *Dec 2023*
- Created and trained a model using TensorFlow for handwritten digit classification.

- Used MNIST dataset, consisting of 70,000 handwritten digit images, to train and evaluate the classifier

Emojis in images Localization *Nov 2023*
- Develop a convolutional neural network to classify and localize emojis in images with TensorFlow.

Smart Medibox *May 2024*
- The medication reminder system uses alarms to remind users to follow the prescribed schedule.
- The continuous monitoring of the temperature and humidity in the Medibox shall ensure that medicines are kept at optimal conditions.
- The amount of light entering the Medibox is regulated by a curtain motor.

UART-FPGA implementation *May 2024*
- Designed and implemented a UART communication link between two FPGA boards as part of the EN2111 Electronic Circuit Design module
- Verified and tested with Quartus Prime and ModelSim
- Demonstrated FPGA implementation by integrating the UART modules with hardware components

Vision-Based Robotics System for SLRC *Mar 2024*
- Development of a machine vision system to identify 3D objects and colors using TensorFlow and OpenCV
- Deployed on Raspberry Pi 4 Model B

Hand Tracking and Gesture Recognition *Dec 2023*
- Implementation of hand motions tracking and recognizing hand gestures using computer vision

AgroMate *Dec 2023*
- IoT and AI-driven Smart Agriculture System to solve key challenges in modern farming
- Has the capable of detecting the wildlife threats to crops

GenericHTTP Arduino Library *Apr 2023*
- Arduino based library that simplifies sending HTTP requests using the ESP8266-01 module (ESP-01) with an Arduino based board

Object Detection with OpenCV *Nov 2023*
- Project aimed at detecting various objects in real-time camera video data using the YOLO pre-trained model along with OpenCV.

Vision ESP *June 2023*
- Develop a system to image processing using ESP32 microcontroller and a webserver

Sparkle Robot *Sep 2023*
- Sparkle Robot, a versatile robotic platform powered by Arduino to fulfill the EN2533: Robot Design and Competition tasks

Analog Implementation of a Five-Band Audio Equalizer *Aug 2023*
- Developed a fully functional audio equalizer using operational amplifier (op-amp) based active filters, enabling the adjustment of gains across the low, mid, and high-frequency ranges.

Automatic Retractable Clothesline System *Feb 2023*
- System to automatically retract the clothesline in response to rain or adverse weather conditions.

Leadership Experience

SLRC 2024 - Sri Lankan Robotics Challenge
Co-Chair *Jan 2024 - Mar 2024*
- Sri Lankan Robotics Challenge is one of the biggest Robotics competitions in Sri Lanka.
- Engaging with corporate clients (ADL, LSEG, Synopsys)
- Team handling (70+ teams)
- Event management (3 Competitions)

Sasnaka Sansada Foundation Sri Lanka
Technical coordinator - Learnsteer Project *May 2021 - Jan 2023*
- Manage a team to make and update the contents of the Learnsteer web site
- Responsible for the Learnsteer web site

Skills Summary

Languages: English (professional proficiency), Sinhala (native proficiency)

Fields: Machine Learning (Computer Vision, NLP, Generative AI, TinyML), Embedded Systems (Arduino, Raspberry)

Programming Languages: Python, C, C++ Matlab

Software: PCB Designing (Altium), Enclosure designing (Solidworks), Photo/Video editing (Photoshop, Davinci Resolve), Electronic simulation (Multisim, LTspice, SIMULINK), FPGA designing (Quartus Prime)

Frameworks: Tensorflow, PyTorch, SciPy, NodeRED, Keras, Scikit-learn, OpenCV, Azure

Sports: Badminton, Swimming

Soft Skills: Leadership, Project Management, Time Management

References

Dr. Peshala Jayasekara
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University of Moratuwa, Sri Lanka
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