AVINDA SHAMAL

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Personal Statement

As an Electronics and Telecommunication Engineering undergraduate from the University of Moratuwa, I am a highly motivated and driven individual with a deep passion for engineering and technology. I am passionate about solving complex problems, optimizing performance, and creating seamless user experiences through the harmonious integration of computer vision, machine learning, and the Internet of Things. I am excited to contribute my skills and experience to tackle the challenges of the future of the technology landscape.

Education

- **University of Moratuwa** *May 2022 - May 2026*
  B.Sc. Eng. Hons. in Electronic and Telecommunication Engineering Colombo, Sri Lanka
  - CGPA: 3.68/4.00 *Transcript*

- **Ruhunu Vijayaba National College** *2011 - 2020*
  secondary education Beliatta, Sri Lanka
  - G.C.E. Advanced Level Examination : 3 As | z score - 2.6852 | Island rank : 242
  - G.C.E. Oridinary Level Examination : 7As B C

Certificates

- Supervised Machine Learning (Stanford University) Regression and Classification- Coursera
- Advanced Learning Algorithm (Stanford University) Neural Networks- Coursera
- Advanced Diploma in English by SDFL Sri Lanka

Interests

Machine Learning
Internet of Things
Communication Networks
Computer Vision
Natural Language Processing
Embedded Systems

Experience

- **Fcode Labs [🌐]** *Dec 2024 - May 2025*
  Intern AI Engineer Nugegoda, Sri Lanka
  - Developed end-to-end AI applications using CIFAR-10 and OCR datasets, mastering TensorFlow/PyTorch workflows
  - Implemented research paper techniques into production code and optimized existing codebases
  - Built an OCR pipeline using CRAFT (text detection) and CRNN (text recognition) models
  - Contributed to a client project (Bunamo Coffee) by creating datasets, evaluating models, and developing codebases using crew.ai
  - Led an internal project to generalize image similarity features using JINA and local CLIP models for dataset-agnostic functionality

- **G.C.E A/L Tutor**
  - I have been offering tuition classes for G.C.E Advanced Level Combined Mathematics since 2021.

Projects

- **Jute Pest Classification using Deep Learning** *Mar 2024 - May 2024*
  Developed a CNN-based solution for agricultural pest identification, achieving 46% accuracy on 17 pest classes. Implemented both custom CNN architecture and transfer learning with DenseNet121, significantly improving classification performance for jute crop protection applications. *[github]*
- **Benchmark for Semantic Bridge Damage Segmentation (Ongoing)** *Sep 2024 - present*
  Conducted an image processing and machine vision project focused on segmenting bridge damage for structural analysis. Utilized advanced algorithms to identify and classify damage, contributing to improved infrastructure maintenance and safety. *[github]*
- **MedMonitor - IoT Health Tracking System** *Jan 2024 - Apr 2024*
  Developed an IoT-based health monitoring system using ESP32 with MAX30102/MAX30205 sensors to track SpO2, heart rate, and body temperature. Implemented real-time data transmission via MQTT protocol and built a Node-RED dashboard for remote patient monitoring with alerts. *[github]*
- **Sportsman's Image Classification Project** *Aug 2024 - present*
  Executed an end-to-end machine learning project for classifying images of sports celebrities. Utilized OpenCV for face and eye detection, and wavelet transforms for feature engineering. Built models using SVM, logistic regression, and random forest, with fine-tuning via grid search. *[github]*
- **Real Estate Price Prediction Project** *Aug 2024*
  Developed a real estate price prediction website using a model built with sklearn and linear regression on the Bangalore home prices dataset. Covered data science concepts such as data cleaning, outlier detection, feature engineering, dimensionality reduction, hyperparameter tuning, and cross-validation. *[github]*
- **Closed Loop Stepper Motor Driver** *Feb 2024 - Aug 2024*
  Developed a closed loop stepper motor driver with integrated feedback for enhanced accuracy and reliability. Implemented real-time position monitoring and adjustments, exploring electromechanical systems and control theory. *[github]*
- **Metal Detector** *Jul 2023 - Nov 2023*
  Designed a very low frequency metal detector operating at 55kHz, capable of detecting metals up to 30cm deep. Distinguished between ferrous and non-ferrous metals, with real-time display on a blue LED screen. *[github]*

Technical Skills

- **Programming Languages:** Python, Java, C / C++, MATLAB
- **ML Frameworks:** OpenCV, TensorFlow, PyTorch, LangGraph, LlamaIndex
- **Libraries:** NumPy, Pandas, Matplotlib, Scipy, Sklearn, Seaborn, Huggingface datasets, EasyOCR
- **Computer-Aided Software:** Altium Designer, SolidWorks
- **Version Control:** Git/GitHub, HuggingFace hub

Soft Skills

Communication - Sinhala(Native), English

Leadership

Positions of Responsibility

Marketing Coordinator *(Aug 2024 - present)*
SPARK Branch of E-Club
Dept. of ENTC, Univ. of Moratuwa

Assistant Head of Events *(July 2023)*
Industrial Electronic Society of IEEE Student Branch
Univ. of Moratuwa

Committee Member *(Jan 2024)* - present
Logistic Committee
Mora Maths Society

Committee Member *(Feb 2023 - present)*
Financial Committee
EXMO 23'

References

Dr. Ranga Rodrigo
B.Sc. Eng. Hons. (Moratuwa),
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