

Subhasinghe Gamage Sahas Eashan

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Personal Statement

Undergraduate pursuing **Electronic and Telecommunications Engineering** at University of Moratuwa. Passionate about **robotics, AI/ML, and embedded systems** with hands-on experience in end-to-end project development from research to deployment. Competitive programming enthusiast with proven track record in robotics competitions and hackathons, specializing in autonomous systems, computer vision, and IoT solutions.

Education

2023 - 2027	B.Sc. Electronic and Telecommunications Engineering , University of Moratuwa CGPA: 3.92/4.0 Relevant Coursework: Circuits and Signals, Communication Systems, Robotics Design, Computer Organization, Methods of Mathematics, Digital Signal Processing, Control Systems	
2013 - 2022	Secondary Education, Richmond College, Sri Lanka A/L Results: Combined Mathematics (A), Physics (A), Chemistry (A)	Z-score: 2.21

Professional Experience

Research Associate *Roboticgen Labs*
January 2025 - Present

Contributing to advanced robotics R&D projects with focus on **PCB design, embedded systems integration**, and hardware/software troubleshooting. Collaborating on cutting-edge robotic solutions and automation systems.

Robotics Team Member *External Team under Roboticgen Labs*
September 2024 - March 2025

Led design, implementation, and testing of autonomous robotic systems for competitions. Specialized in **sensor integration, control algorithms**, and real-time system optimization for competitive robotics applications.

Projects

Lake Water Quality Prediction System [GitHub](#)

- End-to-end ML + IoT system predicting pH, Turbidity, and Conductivity using **XGBoost, LightGBM, SARIMA, and LSTM** models trained on 80,000+ lake records (2000-2023)
- Deployed **LSTM model with dockerized AWS Lambda** for cloud inference; implemented hardware on **ESP32** with real-time sensors, OLED display, and on-device ML using **m2cgen for C++ export**

Multi-Model Video Analyzer [GitHub](#)

- Multimodal deep learning system for emotion and sentiment analysis combining **BERT, R3D-18 (3D CNN), and custom audio encoders** with fusion architecture achieving dual-task classification (7 emotions + 3 sentiments)
- Deployed on **AWS infrastructure using EC2 GPU instances, S3 for data storage, and SageMaker** for distributed training; implemented mixed precision training, gradient accumulation, and TensorBoard monitoring for scalable ML operations

Agentic AI – Multi-Agent LLM System [GitHub](#)

- Developed a collaborative **multi-agent framework** with specialized Web, Finance, and PDF QA agents coordinated by a **Supervisor agent** for modular reasoning and task orchestration
- Integrated **Ollama (Llama 3.1.8B), DuckDuckGo API, yfinance**, and **pgvector embeddings** for real-time web search, financial data analysis, and document QA with transparent source attribution
- Deployed system using **Docker + Docker Compose** with scalable design supporting

RoboGames 2024 - Autonomous Robot [GitHub](#)

- Developed simulated robot for maze navigation, survivor rescue. Object manipulation was done using **Raspberry Pi 5, Kobuki base, Kinect sensor**
- Implemented **computer vision pipeline with HSV algorithms**, multithreaded motor control, and real-time path planning

Omni-Directional Robot [GitHub](#)

- Designed and manufactured robot with **custom SolidWorks chassis**, optimized embedded control systems, and autonomous navigation
- Features precision motor control algorithms, advanced sensor integration, and enhanced maneuverability for complex tasks

ESP32 IoT Medibox System

GitHub

- Comprehensive medicine reminder system with intelligent scheduling, environmental monitoring (temperature/humidity sensors)
- Multi-channel alerts via OLED display and push notifications for enhanced patient safety and medication adherence

MicroMouse

GitHub

- Implemented **flood-fill pathfinding algorithms** with real-time maze mapping and optimized navigation strategies
- Features precise motor control and ir sensors for competitive micromouse challenges

Robotic Design System

GitHub

- Multi-purpose robot capable of line navigation, maze solving, color following, and precise box manipulation
- Features **custom robotic arm design**, advanced control algorithms, and SolidWorks-engineered chassis

Skills

- Python
 - C/C++
 - MATLAB
 - MicroPython
 - Verilog HDL
 - TensorFlow
 - Scikit-learn
 - XGBoost
- OpenCV
 - Computer Vision
 - LSTM
 - Machine Learning
 - Arduino
 - ESP32
 - Raspberry Pi
 - STM32
- FPGA
 - IoT Systems
 - Altium Designer
 - SolidWorks
 - LTSpice
 - PCB Design
 - Arduino IDE
 - STM Cube IDE
- Git/GitHub
 - LaTeX
 - MATLAB
 - Simulink
 - PID Control
 - Sensor Fusion
 - Path Planning
 - AWS
- Docker
 - FastAPI
 - Onshape
 - EasyEDA

Certifications

Mathematics for Machine Learning Specialization

Imperial College London, Dec 2024

Comprehensive coverage of Linear Algebra, Multivariate Calculus, and Principal Component Analysis (PCA) for ML applications.

Deep Learning Specialization

DeepLearning.AI, Jun 2024

Advanced coursework in Neural Networks, Regression and Classification, Advanced Learning Algorithms, Unsupervised Learning, Recommenders, and Reinforcement Learning.

Embedded Systems Specialization

University of California, Irvine

Specialized training in Raspberry Pi Platform and Python Programming, Arduino Interfacing, and C Programming for embedded applications.

Achievements & Awards

Major Awards:

- **Finalist – PLEASE Hack 2025** — Top finalist representing Sri Lanka
- **2nd Runners-up – IESL RoboGames** (University Category) — Autonomous robot with computer vision
- **Winner – Insighture Hackathon 2025** — AI-powered virtual real estate assistant
- **1st Runner-up – CodeRally 5.0** — Competitive programming team leader
- **Best Environment Project** — Tyumen State University, Russia

Competition Finalists:

Codex 2025, CodeSprintX (IIT), AlgoExplore, MoraXtreme 9.0, Robofest (Micromouse), Dextron (Fast Line Following), 15th place XTREME Encode 2024

Academic:

Bronze Medalist - Sri Lankan Mathematics Olympiad 2014, Dean’s List (4 semesters) - University of Moratuwa

Leadership

Vice Secretary	IEEE RAS (University of Moratuwa)	Jan 2025 - Present
Matching Manager IGV	AIIESEC Colombo South	Jan 2024 - Jun 2024
Team Leader	Educational Team of M-Pirates (MoraMaths)	Feb 2024 - Jun 2024
Co-Chair	Mora Battle Bots (IEEE RAS)	Mar 2025 - Present
Co-Chair	Robotics Day (IEEE)	Mar 2025 - Apr 2025
Assistant Pillar Head	Public Relations (Mora Esports)	May 2024 - Present

Extra Curricular Activities

Committee Member (Operations)	Electronic Club University of Moratuwa.	Jun 2024 - Present
Volunteer Management Committee	IEEE Student Branch University of Moratuwa.	Jan 2025 - Present

Professional Affiliations

IEEE Member

— Institute of Electrical and Electronics Engineers

References

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