Akindu Delgahagoda

Undergraduate Student

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Personal Statement

Engineering undergraduate with a specialized focus on robotics and distributed systems architecture. Proficient in bridging the gap between embedded hardware and cloud services to create cohesive intelligent solutions. Brings a rigorous, analytical approach to system design, combining theoretical depth with the practical expertise needed to deliver robust, full-stack engineering projects.

Education

University of Moratuwa — Bandaranayake Mawatha, Moratuwa 10400
BSc Eng Hons, Computer Science and Engineering — *2022 - 2026*
Stream - Integrated Computer Engineering

Sabaragamuwa University of Sri Lanka — Belihuloya, Ratnapura
Diploma in English | Credit Pass — *2021 - 2022*

Sivali Central College — Hidellana, Ratnapura
GCE A/L 2020 | Physical Science Stream | 3A Passes — *2007 - 2020*
GCE O/L 2017 | 9A Passes

Professional Experience

WSO2 — 105, Bauddhaloka Mawatha, Colombo 4
Intern Software Engineer, Digital Transformation Team — *Jan 2025 - Jun 2025*

- Developed "Infra Portal," a full-stack infrastructure automation platform using **Ballerina**, **React** and **MySQL** to replace legacy manual workflows, streamlining GitHub repository provisioning across the company.
- Upgraded and optimized existing internal middleware services to facilitate seamless integration with the GitHub API using **GraphQL**, ensuring robust communication between the new portal and external providers.
- Architected the solution to be extensible beyond GitHub, designing a scalable foundation to support future infrastructure automation requirements.
- Implemented secure authentication using **Asgardeo** and deployed the production-ready containerized application on **Choreo** for internal organizational use.

Skills

Programming Languages: Python | C/C++ | C# | VHDL | Java | JavaScript | Ballerina

Database: MySQL | SQLite

Frameworks and Libraries: OpenCV | ROS | React | Node-RED | FastAPI | Streamlit | PyQt | TensorFlow | PyTorch

Tools: Git | GitHub | Docker | Xilinx Vivado

Technical Fields: Embedded Systems | Robotics | IoT | Machine Learning | Computer Vision | DevOps

Hardware Platforms: Arduino | ESP32 | Raspberry Pi | STM32 | Nvidia Jetson Orin

Projects

JetVIO — July 2025 – Ongoing
Python | C++ | ROS — *Final Year Project (Group)*

- Development of a visual–inertial navigation system for autonomous UAV operation in GPS-denied environments.
- Assembled the UAV platform and initiated simulation-based testing to evaluate system behavior and identify key limitations.
- Targeting a validated UAV capable of stable state estimation and autonomous navigation without GPS.

FPGA Audio Spectrum Analyzer — Jul 2025 – Dec 2025
VHDL | Xilinx Vivado | Nexys A7 FPGA — *Module Project (Group)*

- Real-time hardware-accelerated audio visualizer performing FFT analysis and VGA rendering on an FPGA.
- Experimented with audio input subsystem using UART and I2S protocols.
- Deployed on Nexys A7 FPGA Board and achieved low-latency signal processing and synchronized playback.

QUOT3D – Automating 3D Printing Quotation Jan 2025 – Jun 2025
Python | FastAPI | Docker | Git *Module Project (Group)*

- Web-based platform for generating instant and accurate 3D printing quotations from uploaded 3D models by slicing the model.
- Developed the backend service to analyze 3D model files and extract pricing-related metrics.
- Enabled automated, vendor-configurable quotation generation, reducing manual communication overhead.

FazeTrak – Smart Webcam Jul 2024 – Nov 2024
Python | C++ | OpenCV | PyQt | ESP32 *Semester Project (Individual)*

- Smart webcam system with face recognition and gesture-based face locking and tracking.
- Implemented computer vision pipeline, servo control logic, and desktop application for hardware integration.
- Achieved real-time face tracking with pan–tilt control and streaming video for usage of other applications via OBS Virtual Camera Driver.

MinerShield Jul 2024 – Oct 2024
C++ |JavaScript | ESP32 | Node-RED *Competition Project (Group)*

- IoT-based wireless monitoring system for miner safety in underground environments.
- Contributed to embedded system integration, IoT workflow development and frontend development.
- Demonstrated reliable environmental and miner-status monitoring through a prototype sensor network.

MechaPulse Jan 2024 – May 2024
C++ | ESP32 | Raspberry Pi | Python | FastAPI *Competition Project (Group)*

- Industrial IoT system for machinery fault detection using acoustic signal analysis via Machine Learning.
- Led the deployment of ML models on Raspberry Pi and managed embedded system integration.
- Validated fault detection of a drill machine using the prototype system.

Smart MediBox Jan 2024 – Mar 2024
Arduino | ESP32 | IoT | PCB Design *Module Project (Individual)*

- Smart medicine container for indicating scheduled medicine intake times.
- Designed embedded firmware, IoT connectivity, and Node-RED based control dashboard.
- Delivered a functional prototype supporting remote monitoring and timely medication alerts.

AspireTrust – Bank Transaction and Loan Processing System Sep 2023 – Nov 2023
MySQL | HTML | CSS | Git *Module Project (Group)*

- Database-driven banking system supporting transactions and loan processing.
- Contributed to database schema design and query implementation.
- Produced a simple prototype system demonstrating robust database management practices.

Nanoprocessor May 2023 – Jun 2023
VHDL | Xilinx Vivado | Basys3 FPGA *Module Project (Group)*

- Custom-designed 4-bit nanoprocessor implemented on FPGA hardware.
- Architected the top-level processor design and managed simulation workflows.
- Successfully deployed and validated the processor on a Basys3 FPGA board.

Certifications

Embedded AI
Getting Started with Machine Learning at the Edge: *Arm | Apr 2025 |*
Computer Vision with Embedded Machine Learning: *Edge Impulse | Mar 2025 |*
Introduction to Embedded Machine Learning: *Edge Impulse | Mar 2025 |*

Computer Vision & AI
Vision Language Models Bootcamp: *OpenCV University | Dec 2025 |*
Fundamentals of Deep Learning: *NVIDIA DLI | Dec 2025 |*
Computer Vision: *Kaggle | Dec 2024 |*
Intro to Machine Learning: *Kaggle | Jan 2024 |*

Embedded Systems
Arm Cortex-M Architecture & Software Development: *Arm | Apr 2025 |*
Embedded Software & Hardware Architecture: *CU Boulder | Mar 2025 |*

DevOps & Engineering
GitHub Foundations: *GitHub | Mar 2025 |*
Docker Training for Absolute Beginners: *KodeKloud | Feb 2025 |*

Extra Curricular Activities

IEEE Robotics and Automation Society Student Branch, UoM

- Term 24/25 - Secretary — Oct 2024 – Oct 2025
- Term 23/24 - Vice Chairman — Oct 2023 – Oct 2024
- Term 22/23 - Member—Design Committee — Oct 2022 – Oct 2023
- BotTalks 1.0 - Co Chair — Mar 2023 – Apr 2023

IEEE Student Branch, University of Moratuwa

- Term 23/24 - Member—Membership Development Committee — Nov 2023 – Nov 2024
- IEEE Open Week - Volunteer—Chapter Coordination Committee — Feb 2024 – Mar 2024
- MoraForesight 1.0 - Volunteer—Finance Committee,Design Committee — Mar 2023 – Aug 2023

Mora Hiking Club, University of Moratuwa

- Stridian 2025 - Media Team — July 2025 – Sep 2025
- Stridian 2024 - Health Team — July 2024 – Sep 2024
- Stridian 2023 - Participant — July 2023 – Sep 2023

Department of Computer Science and Engineering, University of Moratuwa

- CSE40 - Volunteer—Marketing Committee — Jan 2025 – May 2025
- Hit The Grounds - Volunteer—Marketing Committee — Dec 2024 – Jan 2025
- CSE Career Fair 2024 - Volunteer—Company Coordination Committee — Dec 2023 – Jan 2024

Techno 2023 Exhibition, IESL IT and Computer Engineering

- Graphic Designer — Sep 2023 – Oct 2023
- Demonstrator — Sep 2023 – Oct 2023

Exmo 2023 Exhibition, University of Moratuwa

- Event Committee Member — Mar 2023 – Jul 2023

Awards & Achievements

Dean's List: Semester 6

Evolve IoT Mini Research Competition: 1st Place

SLIoT Challenge 2023: Semifinalists

President's Scout Award: Issued in 2019

National Junior Science Olympiad 2016: Gold Medal

International Mathematics and Science Olympiad 2013: Silver Medal

National Mathematics and Science Olympiad 2013: Bronze Medal

References

Prof. Dulani Meedeniya
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University of Moratuwa.
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Dr. Sulochana Sooriyaarachchi
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University of Moratuwa.
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