Sahan Lelwala

Computer Engineer

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Summary

A final year Computer Engineering student at University of Ruhuna with expertise in embedded systems, IoT monitoring, robotics,, IC design, and full-stack development. During my Magicbit internship, I mastered embedded firmware programming for solar energy monitoring systems with IoT platforms and edge computing. I excel in bridging hardware and software domains, from low-level FPGA programming to cloud microservices. Furthermore, as an innovator, I actively engaged in IEEE activities, from organizing workshops to participating in technical events and committed to leveraging technology for positive change.

Education

Kingswood College, Kandy, SL 2019 A/L

BSc. in Computer Engineering, University of Ruhuna, SL 2021 to present
SGPA : 3.34 / 4.00
Key Coursework: Digital logic design, Data Structures and Algorithms, Hardware Description Languages, IC design, Robotics and Automation, Machine Learning, Full stack Development, Advanced AI, High Performance Computing

Experience

Embedded System Intern at Magicbit (Pvt) Ltd, Colombo, SL Jul. 2024 to Dec. 2024 (6 months)

During my six-month industrial training as an Embedded system intern, I was fully integrated into the development team, contributing significantly to the design, implementation, and deployment of industrial IoT solutions. My core responsibilities centered on the end-to-end development of IoT monitoring and control systems using IOT platforms. Key projects included the Windforce Kebithigollawa Solar Plant and the multi-plant MAS Thulhiriya Rooftop Solar projects. https://sahanrashmikaslk.github.io

Volunteering Experience

Technical Team Lead - IoTrix 2025 (IoT Design Competition),
IEEE Student Branch UOR Jun 2025 – Oct 2025 (4 months)
Led the technical development of IoTrix 2025, the flagship Internet of Things (IoT) event hosted by the IEEE Communications Society at the University of Ruhuna. This initiative fosters innovation and hands-on learning in IoT among students and professionals.

Logistics Team Lead - SparkLink 1.0 (Electronic Design Competition)
IEEE Student Branch, UOR Jun 2023 – Sep 2023 (4 months)
Oversaw all aspects of event coordination for SparkLink 1.0, the first Electronic Design Competition organized by IEEE Student Branch Ruhuna.

Technical Skills

Programming: C, C++, C#, Java, Python, JavaScript/TypeScript, CUDA, VHDL, Verilog

Web & Cloud: React, Angular, Node.js, Spring Boot, GCP, Docker, Kubernetes, CI/CD

AI/ML: Scikit-learn, TensorFlow, PyTorch, LSTM, YOLO, LangChain, Data Analysis

IoT & Electronics: Embedded Systems (Arduino, NodeMCU, Raspberry Pi), ThingsBoard, SCADA, FPGA/HDL

Robotics & Automation: MATLAB/Simulink, PLC Programming (Ladder Logic), Industrial Automation

Projects

AINet - AI-Powered Network Anomaly Detection *AI / Networking*
Enterprise-grade anomaly detection with LangChain/LangGraph, FastAPI backend, real-time dashboards, and distributed Linux agents. https://github.com/sahanrashmikaslk/AI_Network_Analysis

Online Medicine Delivery System *Cloud / Microservices*
Microservices-based platform on GCP with RabbitMQ, Redis, PostgreSQL, Google OAuth, CI/CD, and load balancing. https://github.com/sahanrashmikaslk/online-medicine-delivery

Gene Expression Correlation (OpenMP & CUDA) *High Performance Computing*
Accelerated Pearson correlation on large gene datasets using hybrid OpenMP–CUDA (up to 6× speedup). https://github.com/sahanrashmikaslk/GeneExpressionData-CorrelationMatrixComputing-UsingOpenMP-CUDA

32-Bit RISC Processor *Hardware / HDL*
Designed and simulated a 32-bit RISC processor with 15 core instructions using Verilog & ModelSim. https://github.com/sahanrashmikaslk/HDL-32bit_RISC_Processor

Classical Music Generator *AI / Deep Learning*
LSTM-based model trained on MusicNet for real-time classical music generation, deployed on AWS EC2 https://github.com/sahanrashmikaslk/AI-ClassicalMusicGenerator

Flight Delay Prediction *Machine Learning*
Built predictive models (SVM 93%, KNN 88%) on 500K+ U.S. flight records with feature engineering & validation. https://github.com/sahanrashmikaslk/MachineLerning-FlightDelayPrediction

Pet Adoption Web Application (MERN) *Web Development*
A pet adoption site built using MERN. Features: user auth, CRUD, image upload, search filters, responsive UI with neumorphic design. https://github.com/sahanrashmikaslk/MERN-PetAdoptionWebApplication

Smart Home Security System (NodeMCU, Telegram) *IoT / Hardware*
Built for Eminence 4.0 competition: motion sensors + ESP8266 NodeMCU + Telegram API integration for alerts; remote monitoring & control. https://github.com/sahanrashmikaslk/SmartHomeSecuritySystem-Using_NodeMCU

BJT Amplifier Using Proteus with PCB Implementation *Electronics*
Designed common-emitter BJT amplifier in Proteus; transferred design onto PCB; targeted gain and bandwidth performance met. https://github.com/sahanrashmikaslk/BJT_Amplifier-Using_Proteus

HANGOUTS.LK (ONGOING) | Java, TypeScript, Angular, SpringBoot, Microservices *Web Application*
Leading a software group project for STRATEC-ZB PARTNERS PTE. LTD, developing an end-to-end table reservation system with restaurant and kitchen management. https://back-office-web-efac.netlify.app/

Achievements & Awards

Eminence 4.0 (2024) — Champions, inter-university technical competition (IoT innovation, MATLAB, networking).

Red Cypher CTF (2024) — 2nd Runners-up, cybersecurity challenge among 40+ teams.

HaXtream 2.0 (2023) — 7th place, competitive programming (dynamic programming focus).

XBotiX (2023) — 6th place, robotics competition (line-following, wall-following, color detection).

References

Dr. Rajitha Udawalpola: Senior Lecturer, Dept. of Electrical and Information Engineering, Faculty of Engineering, University of Ruhuna
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