



Tharusha Sehan

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ABOUT MYSELF

Specialist in Embedded Systems & Edge AI with an international background at Robert Bosch GmbH. Focused on hardware-driven system design, real-time protocols, and deploying machine learning models onto state-of-the-art microcontrollers. Proven track record in bridging complex signal processing with high-performance embedded hardware.

EDUCATION & TRAINING

BSc (Hons) in Electronic and Telecommunication Engineering

General Sir John Kotelawala Defence University [08/2021 - 09/2025]

City: Colombo

Website: <https://kdu.ac.lk/> | **Field(s) of study:** Electronic & Telecommunication Engineering :

WORK EXPERIENCE

Robert Bosch GmbH - Inertial Sensors Engineering Department - Germany, Reutlingen

Electronic Engineering Intern (Voluntary)

[01/04/2025 - 30/09/2025]

- Worked on enhancing the performance of the BMI560 motion sensor by developing and testing a newly assembled hardware setup.
- Conducted RF engineering experiments using a Vector Network Analyzer (VNA) to measure impedance characteristics of circuits and optimize sensor interfaces.
- Assisted in MEMS sensor calibration and evaluation for devices requiring humidity sensitivity, designing and validating an improved test setup.
- Collaborated with senior engineers to analyze sensor data, optimize measurement accuracy, and document performance metrics.
- Gained experience in signal analysis, sensor interfacing, circuit testing, and RF system evaluation within a high-tech R&D environment.
- Developed and validated microcontroller-based prototypes to automate performance testing of MEMS sensors, streamlining the evaluation process and improving data reliability.

University of Bremen - Germany, Bremen

Research Associate

[07/08/2024 - 10/10/2024]

- Developed an elephant detection system using vibration analysis and subterranean sensors to monitor elephant movement patterns.
- Applied Fourier series and time-series modeling to analyze sensor data and identify movement signatures.
- Designed and implemented machine learning models including CNNs and LSTMs to improve detection accuracy.
- Integrated LoRa communication for wireless data transmission from remote sensors.
- Applied Digital Signal Processing (DSP) techniques and Exploratory Data Analysis (EDA) to process and interpret environmental signals.
- Deployed machine learning models on edge devices using TFLite, optimizing real-time detection.
- Developed and tested systems on microcontrollers and boards: Portenta H7, Raspberry Pi, Heltec ESP32 V2.

Vega Innovations (South Asia's First Electric Supercar Manufacturer) - Sri Lanka, Colombo

Electronic Engineering Intern

[16/10/2023 - 29/03/2024]

- Worked with the CAN communication protocol to optimize Electronic Control Unit (ECU) performance in the company's flagship electric vehicle (EV), minimizing noise and latency in data transmission.
- Designed and enhanced the Electric Vehicle Charging Controller (EVCC) for improved efficiency and communication reliability within the EV system.
- Developed IoT-based solutions for a wireless key tag system for electric motorcycles, integrating microcontroller and RF technologies.
- Conducted RF research and testing to improve battery health monitoring and signal integrity in EV communication circuits.
- Collaborated with multidisciplinary engineering teams on embedded hardware design, testing, and validation processes.

HONOURS AND AWARDS

[09/08/2023] General Sir John Kotelawala Defence University

Research Publications

Nominated as the best research paper from the Faculty of Engineering at KDU International Research Conference 2023.

Developed a wearable embedded system utilizing flex sensors and an IMU to translate hand gestures into real-time voice commands for silent military communication. The project focused on hardware-driven design, implementing signal processing algorithms on a microcontroller to ensure high-accuracy gesture recognition and reliable data transmission via low-latency serial communication protocols

PROJECTS

[03/01/2024 - 15/12/2024]

Elephant Detection and tracking System through Vibration Analysis and underground Sensor Deployment

Led my final year collaborative research team with the University of Bremen to develop an elephant detection system using subterranean sensors and vibration analysis. The project involved applying Fourier series and Digital Signal Processing to identify movement patterns, deploying CNN and LSTM models via TFLite onto Portenta H7 and Raspberry Pi for real-time edge detection. Integrated LoRa communication for wireless data transmission to mitigate human-elephant conflict in remote environments

[04/01/2024 - 03/04/2024]

Gesture Controlled Glove for a Military Team's Communication

Developed a wearable embedded system for silent military communication using an Arduino Nano (ATmega 328P) to translate hand gestures from flex sensors into voice commands. The project involved implementing signal processing for gesture recognition and utilizing serial communication via the HC-05 Bluetooth module to enable low-latency, non-verbal interaction between teammates in stealth environments.

VOLUNTEERING

[10/10/2022 - 06/10/2023]

Project Coordinator - IEEE ComSoc in General Sir John Kotelawala Defence University

Helped plan a series of workshops on engineering subjects, including Autodesk Eagle, Arduino, and the Internet of Things, in addition to professional development.

[02/01/2022 - 10/12/2022]

Treasurer - Electronic, Robotics & Innovation Club; General Sir John Kotelawala Defence University

Managed club finances and budgets for various technical projects while hosting and managing several inter- and intra-faculty workshops. I coordinated logistics for robotics competitions, oversaw the procurement of R&D components, and led student teams to ensure the successful delivery of innovative engineering initiatives.

SKILLS

Technical Skills

LoRa | C / C++ | MQTT | Python | DSP | CAN Protocol | BLE | Sensor Calibration, Trimming & Integration | PCB design | EDA Tools | MATLAB | IoT system integration | Fourier & Time Series Analysis | RF Engineering

Soft Skills

Leadership | Project Coordination | Public Speaking | Teamwork

LANGUAGE SKILLS

English

LISTENING: B2 **READING:** B2 **WRITING:** B2

SPOKEN PRODUCTION: B2

SPOKEN INTERACTION: B2

Levels: A1 and A2: Basic user - B1 and B2: Independent user - C1 and C2: Proficient user