Balasubramaniam Nithusan

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About Me

Electronics and Computer Science final-year undergraduate with a strong interest in Internet of Things (IoT) and embedded systems. Eager to apply IoT technologies to solve real-world problems, and skilled in developing smart, connected applications using microcontrollers, sensors, and modern development tools.

Education

BSc (Hons) in Electronics and Computer Science — CGPA: 3.02,   July 2022 – Present
University of Kelaniya

G.C.E. A/L — Z-score: 1.5968   2019
Jaffna Hindu College

- **Results:** Combined Mathematics – A, Chemistry – B, Physics – C

Technical Skills

Electronics

- **Core Concepts:** Analog Electronics, Digital Electronics, Logic Design, Signal Processing, Control Systems
- **Simulation & PCB Design:** Proteus, EasyEDA
- **Developer Tools:** Arduino IDE, MicroC, MATLAB
- **Embedded Systems:** Microcontrollers (PIC, ESP32, Arduino)

Computer Science

- **Programming Languages:** C, Java, Python, Kotlin
- **Frameworks & Libraries:** React JS, Spring Boot
- **Databases:** MySQL, MongoDB, Firebase
- **Web Development:** HTML, CSS, JavaScript, PHP
- **Version Control:** Git, GitHub
- **Tools:** Postman, Visual Studio Code, Android Studio

Research Projects

Cryptocurrency Price & Sentiment Analysis with Fake News Detection

- Designed a hybrid Bi-LSTM + GRU model that achieved 97.6% accuracy for predicting SOL, ADA, and XRP prices.
- Integrated CryptoBERT and VADER for sentiment analysis, and implemented fake news detection using metadata analysis.
- Built and evaluated the pipeline using Python, TensorFlow, PyTorch, Hugging Face, Flask, and scikit-learn.

Projects

IoT-Based Energy Meter

- Developed a system to monitor energy consumption in real time using an ESP32 microcontroller and voltage/current sensors.
- Transmitted sensor data to Firebase and built a Flutter-based mobile app to display live usage and billing information.
- **Technologies:** Flutter (Dart), Firebase, ESP32, Voltage & Current Sensors.

Battle Bot   *Aug 2023 – Apr 2024*
- Built a 15 kg combat robot with a high-torque drivetrain and a custom weapon system.
- Configured full RC control via FlySky i6X for independent drive and weapon channels.
- **Technologies:** FlySky i6X, iA6B receiver, 775/997 DC motors, brushed ESCs, planetary gear set, SolidWorks.

Heart Disease Prediction Web Application using ML   GitHub Link ↗
- Built a Flask-based web app using ML models (Random Forest) to predict heart disease from the UCI dataset.
- Integrated a user-friendly HTML/CSS frontend.

Music Genre Classification Web App using ML   GitHub Link ↗
- Built an AI-powered Flask application to predict music genres from audio files.
- Designed and trained a Convolutional Neural Network (CNN) on mel-spectrogram features extracted from audio.
- Implemented audio preprocessing with Librosa and real-time predictions via a Flask REST API

Movie Review and Recommendation Fullstack Application   GitHub Link ↗
- A fullstack application built with React (frontend) and Spring Boot (backend), integrated with MongoDB for data storage.
- Developed backend APIs using Spring Boot and MongoDB, implemented JWT-based authentication.

Competitions & Achievements

- **Champion – Robo Battle, University of Kelaniya:** Secured 1st place in inter-university robotic combat competition.
- **4th Place & Best Player – IROBEX, NiBM:** Led a 15kg battle bot team to the Top 4 and received the Best Player award for strategic control.
- **Master of Destruction – Electro Combat, University of Jayewardenepura:** Awarded for building the most powerful and destructive bot during knockout rounds.

Soft Skills

- Effective team collaboration
- Strong problem-solving skills
- Clear and confident communication
- Adaptability to changing environments

Languages

- **English:** Professional proficiency
- **Tamil:** Native
- **Sinhala:** Limited working proficiency

References

Dr. B.M.T. Kumarika, Senior Lecturer (Grade II),
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University of Kelaniya, Sri Lanka.
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