

HYRIB ANISTUS GNANARETNAM

Personal info

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Chundikuli, Jaffna,
Sri Lanka.

Links

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Skills

Python, JavaScript, C, C++,
Java, Bash, Dart, VHDL
Node.js, Express, Next.js,
React, PostgreSQL,
MySQL, MongoDB, Redis
AWS, Docker, Jenkins,
Terraform
STM32, ESP32, MSP430,
Onsemi, Arduino
MQTT, GSM, LoRa, BLE,
RTOS
Linux, Windows, Mac
Git, CMake, EagleCAD

Languages

Tamil (Native)
English (Fluent)

WORK EXPERIENCE

Freelance Software Engineer

Full-time, Independent Contractor

JAN 2023 – PRESENT

- Developed and deployed responsive web applications using Next.js, React, and Node.js, focusing on performance optimization and SEO best practices.
- Built a multi-platform inventory management system using the PERN stack, integrating with platforms like WordPress, Daraz, and Shopify, improving inventory tracking efficiency by 40%.
- Deployed and maintained a full-stack food delivery application with real-time order tracking and payment integration.
- Implemented CI/CD pipelines using Jenkins and Docker, reducing deployment time by 60%.
- Managed AWS infrastructure including EC2, S3, RDS, and Lambda, ensuring 99.9% uptime for client applications.
- Automated infrastructure provisioning using Terraform and AWS CloudFormation, streamlining deployments.

SenzMate IoT Intelligence Solutions

Full-time, Embedded System Engineer

JAN 2023 – NOV 2023

- Architected and developed an STM32-based FOTA bootloader over HTTP, reducing deployment and update time by half.
- Developed and deployed an MQTT library for 100+ STM32-based devices, with support for 2G and 3G GSM modules.
- Implemented critical features in a LoRa remote control device to resolve continuous transmission and power reset related issues.
- Developed and deployed an MQTT, LoRa based gateway and peripherals system for monitoring cold storage in a supermarket.
- Designed a prototype master-slave system to monitor and control hydroponics environment via MQTT and LoRa.
- Developed a sleep bud prototype to play audio from external flash memory, with BLE and UART for audio data transfer.

SenzMate IoT Intelligence Solutions

Full-time, Embedded System Engineer Intern

SEP 2021 – MAR 2022

- Developed a prototype driving behavior detection system for cars using IMU, BLE and decision tree algorithm to identify harsh driving.
- Added persistent storage capability to an environmental sensor device based on MQTT to manage power failures and signal drops.
- Implemented timestamp functionality in an MQTT-based environmental sensor device using RTC in GSM module for accurate data mapping.

EDUCATION

BSc Engineering (Hons) in Electrical & Electronic Engineering

Sri Lanka Institute of Information Technology





Feb 2019 – Mar 2023

Cumulative GPA: 3.63

TECHNICAL EXPERTISE

- Cloud Computing & AWS Services – EC2, S3, Lambda, IAM, VPC
- CI/CD Pipelines – Jenkins, GitHub Actions, GitLab CI/CD
- Infrastructure as Code (IaC) – Terraform, AWS CloudFormation (CFN)
- Containerization – Docker
- Wireless Communication & IoT – LoRa, BLE, Wi-Fi, MQTT
- Embedded Systems Architecture & Design
- Firmware Development & Optimization

Soft Skills

-  Team Leadership
-  Communication
-  Project Management
-  Time Management

Hobbies

-  Photography
-  Gaming

PROJECTS

Multi-Platform Inventory Management System

FREELANCE PROJECT
[POSTGRESQL, EXPRESS, REACT, NODE.JS, RESTFUL APIS]

- Developed a comprehensive web app using PERN stack to centralize inventory management across multiple e-commerce platforms
- Implemented secure authentication, role-based access control, and automated periodic data synchronization

Real-time GPS Tracking System

FREELANCE PROJECT
[ESP32, GSM, MQTT, FLUTTER]

- Designed and developed an ESP32 and GSM-based device for continuous location tracking with MQTT server integration
- Created a Flutter mobile application for real-time device location monitoring and tracking history

Cloud-Based Smart Hydroponic System Controller

SENZMATE (PVT) LTD | ASSOCIATE EMBEDDED SYSTEM ENGINEER
[STM32, GSM, LoRA, MQTT]

- Developed an STM32-based controller system integrated with GSM and LoRa modules for remote monitoring and control of hydroponic systems
- Implemented automated monitoring and control algorithms to maintain optimal pH, EC, and temperature levels

Smart Irrigation System with Advanced Soil Sensors

SENZMATE (PVT) LTD | INTERNSHIP
[STM32, GSM, MQTT, FLASH MEMORY]

- Designed an STM32-based system integrating multiple soil sensors for monitoring moisture, pH, EC, and temperature
- Implemented data logging to flash memory and periodic cloud synchronization via MQTT over GSM

Driver Behavior Analysis System

SENZMATE (PVT) LTD | INTERNSHIP
[STM32, IMU, PATTERN RECOGNITION]

- Created an STM32 and IMU-based system to detect and analyze driving patterns including hard acceleration, braking, and cornering
- Implemented pattern recognition algorithms to enhance driver safety and reduce vehicle maintenance costs

Ambulatory Blood Pressure Estimation System

SLIIT | FINAL YEAR PROJECT
[ESP32, BLE, FLUTTER, DEEP LEARNING]

- Engineered a device for capturing ECG and PPG measurements with BLE transmission to a mobile application
- Developed a deep learning model for blood pressure estimation using processed ECG and PPG signals

IoT-based Bus Pass System

SLIIT | THIRD YEAR PROJECT
[ESP32, RFID, MQTT, TFT DISPLAY]

- Developed an ESP32-based RFID card reader system with real-time server communication via MQTT
- Implemented a TFT display interface for showing transaction status and user information

Smart Home Control System

PERSONAL PROJECT
[ARDUINO, BLUETOOTH, MOTION SENSORS]

- Developed a Bluetooth-enabled home automation system to control lighting, fans, and door security.