

GIRESH BRANAV S S

Embedded Systems Engineer — ESP32 / STM32 — Edge ML (TFLM)

Low-power firmware • Custom PCB • On-device inference

India — s.s.gireshbranav@gmail.com — +91 8428426215

LinkedIn: giresh-branav — GitHub: Giresh05

Summary

Final-year ECE student focused on **constraint-driven embedded systems**. Experienced in designing offline, low-power firmware, custom PCBs, and deploying **machine learning models on microcontrollers** using TensorFlow Lite Micro. Strong at balancing power, memory, latency, and reliability for real-world deployments.

Skills

Embedded & Firmware: Embedded C/C++, Bare-metal firmware, PlatformIO, Arduino, ESP32 (WROOM, S3), STM32, CH32V003, SPI, I2C, UART, ESP-NOW, LoRa (SX1276), low-power design, watchdogs, FSM-based logic, SD logging

Edge ML: TensorFlow Lite Micro, INT8 quantization, model compression, memory & latency optimization, on-device inference on ESP32-S3

Hardware & Tools: KiCad (schematic + PCB), sensor interfacing, hardware debugging, Git, Arduino IDE, CH32FUN

Projects

No_Net – Offline Embedded Monitoring System

ESP32, CH32V003, Embedded C/C++, Custom PCB

- Designed a decentralized, internet-free monitoring system for hostile and remote environments
- Implemented fault-tolerant SD “black box” logging to preserve data during power loss
- Developed low-power sleep/wake strategies for battery-powered deployment
- Designed custom PCB and enclosure with focus on field reliability
- Delivered 80–90% of commercial system functionality at under 10% cost

Smart Lock with On-Device Face Recognition

ESP32-S3, TensorFlow Lite Micro, Embedded C++

- Deployed face recognition entirely on-device using TensorFlow Lite Micro
- Reduced model size by **90% (to 488 KB)** using quantization and compression
- Achieved **300 ms inference latency** under tight memory constraints
- Implemented dual authentication (NFC + Face) with full offline privacy
- Optimized accuracy vs memory vs latency trade-offs for edge deployment

Experience

Embedded Systems Intern – Retech Solutions Pvt. Ltd.

Jun 2025 – Jul 2025

- Owned firmware development for IoT-based intelligent street-lighting system
- Integrated LDR and PIR sensors with Arduino and ESP8266 controllers
- Implemented cloud monitoring using ThingSpeak
- Delivered working prototype in two weeks with focus on power efficiency

Education

B.E. Electronics and Communication Engineering

SRM Valliammai Engineering College

CGPA: 8.02

Achievements

- Finalist – Hacksagon 2025 (National Hackathon, IIITM Gwalior)
- Winner – Pudhu Yugam, Rotaract Club, SRM Valliammai Engineering College
- Finalist – Seismo Hack 1.0 (Global Hackathon)
- Winner – XPLOITS'25 – National Level Technical Symposium

Certifications

Introduction to Machine Learning – NPTEL

Machine Learning with IoT – SRM Valliammai Engineering College