

Amal Babu

Chalaky, Kerala

amalbabu34767@gmail.com — +91 7034177362

GitHub: github.com/Am4l-babu — Portfolio: itzmeaml.in

Profile

Electronics and Embedded Systems enthusiast focused on building real-time embedded systems and edge AI solutions with practical deployment considerations.

Research Interests

Edge AI and TinyML, Spiking Neural Networks (SNN), Low-power IoT Systems, Digital Twin Systems, Wireless IoT Protocols (LoRaWAN, Matter, Thread, Zigbee), Real-time Embedded Systems, Sensor Data Analytics

Technical Skills

Embedded Systems: ESP32, ESP8266, Arduino, Raspberry Pi

Programming: C/C++, Python, SQL, HTML, CSS, JavaScript, Flutter

IoT & Communication: WiFi, MQTT, LoRaWAN, HTTP APIs

Machine Learning: TinyML, Edge Impulse, scikit-learn

Tools: PlatformIO, Arduino IDE, Git, VS Code, Fusion 360

Core Skills: Problem Solving, Quick Learning, System Design Thinking

Hardware Skills: Adept in Soldering, Circuit Assembly, and Electronic Troubleshooting

Mechanical Skills: Experienced in Welding, Lathe Operation, Drilling, and Mechanical Fabrication

3D Printing: Operates Ender 3 Pro with OctoPi for remote monitoring, designs components using Fusion 360

Projects

AgriTwin – Digital Twin Framework for Precision Farming

- Built edge-to-cloud IoT system (ESP32 → Raspberry Pi → Cloud)
- Real-time monitoring with MQTT and FastAPI backend
- Integrated digital twin models and AI-based analysis

GitHub: github.com/Am4l-babu/S6-MINI-PROJECT

FlowVision – Smart Water Digital Twin Leak Detection System

- Developed ML-based leak detection with physical constraints
- Implemented anomaly detection and Streamlit visualization

GitHub: github.com/Am4l-babu/AML_LABS_flowVision

Ender 3 Pro – Custom Marlin Firmware Configuration

- Customized and configured Marlin firmware for performance and reliability
- Tuned firmware parameters for optimized 3D printing

GitHub: github.com/Am4l-babu/Ender-3-Pro-Custom-Marlin

WireClaw – Modular Robotics Control System

- Developed modular robotics framework using PlatformIO and C++
- Designed modular architecture for scalable robotics applications

GitHub: github.com/Am4l-babu/wireclaw

Other Projects (Hobby)

- **ESP8266 LED Cube** – Wifi-controlled 3D LED cube with real-time WebSocket interface [GitHub](#)
- **Nova Strike** – Embedded arcade game on ESP32-S3 [GitHub](#) — [Live Demo](#)
- **PazhamAI** – Project built for TinkerHub “Useless Projects” hackathon [GitHub](#) — [Project Link](#)

Education

B.Tech in CSE (AI)

Adi Shankara Institute of Engineering and Technology

2023 – 2027

Diploma in Mechanical Engineering

Thiagarajar Polytechnic College

2020 – 2023

Soft Skills

Communication, Leadership, Teaching, Teamwork, Adaptability

Languages

English, Malayalam, Hindi, Tamil

Interests

3D Printing, DIY Electronics, Learning and Self Improvement