Mathivaanan Aruldass

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Edge AI & IoT Engineer

Edge AI and IoT Engineer with strong ownership across system architecture, embedded firmware, edge intelligence, and industrial deployment. Proven experience delivering production-grade IoT and Edge AI platforms integrating microcontrollers, Linux-based edge devices, real-time communication protocols, and LLM-powered intelligence. Experienced in leading end-to-end product lifecycles—from requirements analysis and hardware design to deployment, monitoring, and optimization in live industrial environments. Adept at building scalable, secure, and low-latency systems for industrial automation and connected infrastructure.

Technical Skills

Programming	:	C, C++, Embedded C, Python, MicroPython
Edge AI & ML	:	LLMs, RAG architectures, CNNs, OpenAI API, Ollama, LangChain, TensorFlow, PyTorch
Embedded & IoT	:	ESP32, STM32, Raspberry Pi, ARM, AVR, NodeMCU, Arduino
Protocols	:	MQTT, WebSocket, CAN, UART, SPI, I2C, TCP/IP
Computer Vision	:	OpenCV, ANPR systems, industrial camera integration
Hardware Design	:	Altium, Allegro, PCB bring-up and validation, SolidWorks (mechanical and enclosure design)
Dev & Ops Tools	:	Linux, Git, GitLab, VS Code, system debugging, cybersecurity fundamentals

Experience

IoT Developer — Nov 2024 – Present
Onemodo Technologies Private Limited — *Chennai, India*

- Owned end-to-end delivery of production-scale IoT and Edge AI systems, from system architecture and device selection to deployment and post-production support in live industrial environments
- Architected high-availability IoT platforms using Raspberry Pi 5 and ESP32-S3, integrating industrial sensors with hybrid MQTT/WebSocket communication for reliable, low-latency data pipelines
- Operationalized Edge AI and LLM-based solutions using GPT-4o, LLaMA 3.1, and Grok-style reasoning models, implementing RAG pipelines with vector databases for real-time industrial intelligence
- Delivered industrial automation solutions including quarry and crusher management systems, unmanned access control, and RFID/NFC/ANPR-based vehicle tracking platforms
- Led full product lifecycle execution including PCB design, embedded firmware development, SolidWorks-based mechanical design, manufacturing coordination, field installation, and system validation

Technical Trainer — Jun 2023 – Nov 2024
Livewire — *Coimbatore, India*

- Designed and delivered industry-focused training programs in Embedded Systems, IoT, Robotics, and AI/ML with emphasis on real-world deployment and system integration
- Led hands-on labs and capstone projects simulating production environments, enabling learners to build complete hardware–software systems
- Mentored interns and early-career engineers through full product development lifecycles, emphasizing debugging, scalability, and operational readiness
- Continuously modernized curriculum by integrating emerging technologies, updated toolchains, and feedback from industry-aligned projects

Education

M.P.Nachimuthu M.Jaganathan Egineering College — Chennimalai
Bachelor of Engineering in Electronics and Communication Engineering — *Oct 2019 – Jun 2023*

PROJECTS

Industrial Edge AI Chatbot Platform (LLM + RAG)   *OpenAI, Ollama, MCP, MySQL, Edge AI, Python*

- Designed and deployed a production-grade Edge AI chatbot platform enabling natural-language interaction with live industrial data
- Implemented RAG pipelines integrating LLMs with real-time MySQL databases to provide context-aware operational insights
- Built a secure microservices-based orchestration layer for AI inference, data access, and streaming workloads
- Optimized deployment for edge devices, enabling low-latency inference and offline-capable operation in industrial environments

Unmanned Weighbridge System with ANPR & RFID   *Raspberry Pi, OpenCV, RFID, IoT, Cloud, 3D Design*

- Delivered a fully automated unmanned weighbridge solution integrating sensors, RFID, ANPR, and cloud-based data logging
- Implemented secure vehicle authentication and automated transaction workflows to eliminate manual intervention
- Designed and validated industrial-grade enclosures ensuring durability and environmental resilience

Industrial Control System using CAN (STM32–ESP32)   *STM32, ESP32, CAN Protocol, Embedded C, IoT*

- Designed a fault-tolerant CAN-based communication network between STM32 and ESP32 devices for industrial control
- Developed embedded firmware supporting real-time data acquisition, control logic, and diagnostics
- Integrated the control layer into higher-level IoT platforms for end-to-end monitoring and analytics

CERTIFICATIONS

- **Advanced C and Introduction to Embedded Programming** — VAct Technology
- **IoT and Embedded Systems** — Robotics and Allied Division (RAAD)
- **National Level Technical Symposium – Paper Presentation** — Velalar College of Engineering and Technology