

NISHANTH K

Embedded Systems & Robotics Engineer • Technical Lead • Systems Builder

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SUMMARY

Embedded Systems & Robotics Engineer with 2+ years of hands-on experience across embedded systems, mechanical design, and IoT backends. Built and delivered production robotics from scratch as the sole technical person at an early-stage startup — hardware, firmware, CAD, and backend. Strong at system architecture, cross-domain problem solving, and shipping under constraint.

EXPERIENCE

Technical Lead | Fubotics Private Limited

Oct 2024 – Present

Bengaluru, India • Robotics startup — facade and duct cleaning robots

- Sole technical person for first year — owned full product stack: mechanical design, electronics, firmware, IoT backend; transitioned to leading a team of 4–5 interns and 2 employees in the second phase
- Designed and built facade cleaning robot V1 (prototype → site test in ~2 months) and V2 (production-grade, tested on 20-meter building facade)
- Independently developed industrial duct cleaning robot — camera-guided, cable-tethered, RS485 + RJ45 camera integration; multiple units deployed
- Engineered dual-gantry winch communication system: Joystick → LoRa → Bridge ESP → ESP-NOW → Winch Box. Diagnosed 3-phase motor interference blocking LoRa 15 days before deployment — built custom LoRa-to-WiFi bridge as workaround
- Built Compass — internal R&D OS with experiment tracking, lab inventory, team chat, document management, and RAG-powered AI assistant (React, Supabase, pgvector, Gemini, Cloudflare Pages)
- Built IoT fleet management backend: Flask + Firebase + MQTT on AWS VPS + Razorpay with real-time credit deduction
- Managed procurement, vendor relationships, component sourcing, and production SOPs for both robot versions

Embedded Engineer Intern | Craft Tech 360

Apr 2024 – Jul 2024

Bengaluru, India • Automation and control systems

- Built DMX-controlled LED lighting systems and linear actuator/stepper motor control setups for stage and industrial automation applications
- Developed a golf swing analyzer device — wearable clip-on sensor tracking swing speed, angle, and motion using IMU data
- Worked under founder Ravi Pujari (CheekoAI / Hyperstate Technologies); exposure to how founders approach product scoping and technical decisions

Junior Embedded Engineer | Parram Innovations

Jul 2023 – Mar 2024

Bengaluru, India • Interactive kinetic art installations

- Drove ~90% of the Kinetic Wave installation end-to-end — all technical decisions, electronics, firmware, wiring, and system integration; occasional help from others on specific mechanical tasks
- Acted as the electronics orchestrator across 4–5 different kinetic art installations — primary point of contact for all electronics decisions and execution across projects
- Started as volunteer (Jul 2023), converted to part-time embedded engineer (Jan–Mar 2024) based on technical contribution

PROJECTS

AI Voice Pendant — Wearable Personal AI Interface

Personal Build | Jan 2026

- Built a wearable AI pendant from scratch — Seeed Studio XIAO ESP32S3, I2S microphone, touch button, LiPo battery, 2.4GHz WiFi antenna, housed in a custom 3D printed enclosure
- Press touch button → speak → audio recorded as WAV file → sent to transcription API → AI classifies and stores as task, idea, reminder, or note in personal database
- Hardware interface for the Neuron personal AI OS — full stack from embedded firmware to cloud backend; designed for always-on wearable use

Hexarover — Terrain-Traversing Rescue Robot

Final Year Project | 2024–25

- Six-wheeled robot built to navigate stairs, uneven surfaces, and rough terrain — designed for rescue scenarios
- Built entirely from market-available materials: PVC/acrylic frame, BTS7960 motor driver, 7.2Ah lead-acid battery — no custom parts, no 3D printing
- 2-person team by choice; handled full mechanical assembly, motor control firmware, and system integration end-to-end

Color-Detecting Robotic Arm

College Mini Project | Aug 2024

- Stepper-motor-driven robotic arm that used laptop camera + OpenCV to identify colored objects and sort them into correct boxes autonomously
- Designed pulley system connecting stepper shaft to acrylic arm; handled all electronics, firmware, and computer vision pipeline
- Entire frame fabricated by hand — acrylic, cut and drilled — zero 3D printing or laser cutting; built in 3–4 sleepless sessions

BLE Gamepad — Steering Wheel + Pedals

Personal Build | 2024

- Built a fully functional BLE gamepad using ESP32 — custom steering wheel and pedal set recognized as native gamepad on Windows
- Diagnosed and resolved ADC2/Bluetooth conflict on ESP32 (ADC2 disabled when BT radio active — rerouted all analog reads to ADC1 channels); fixed Windows BLE device cache bug causing ghost controller recognition
- Completed V1 in 2 weeks once a hard deadline was set — closed the loop fast, no scope creep

Compass — R&D Operating System

Fubotics | 2025

- Built a full internal R&D platform from scratch: experiment tracking, lab inventory, 3D printer usage logging, team chat, document management, and AI assistant
- AI assistant powered by RAG — semantic search over company R&D data using pgvector embeddings, Gemini 2.5 Flash, Mistral fallback, Supabase Edge Functions
- Stack: React, Supabase, PostgreSQL, pgvector, Gemini API, Cloudflare Pages — deployed and actively used by the team

Neuron — Personal AI Operating System

Side Project | 2025–26

- Built and launched a personal productivity OS: Locus (task management), Pulse (journaling), Cortex (content ingestion with semantic search)
- Stack: React/Vite, Supabase, n8n, pgvector, OpenRouter, Gemini — live at app-heyneuron.pages.dev
- Automated workflows using n8n orchestration; RAG-based content retrieval with vector embeddings

Fubotics Marketing Agent — Autonomous AI Content Pipeline

2026 | Architected

- Multi-agent AI system using LangGraph + CrewAI + LangChain — researches topics, writes platform-specific content, generates images, scores quality, and publishes to LinkedIn, Instagram, and Facebook autonomously
- Stateful LangGraph workflow with human-in-the-loop Telegram approval; quality below threshold triggers automatic regeneration. Stack: FastAPI, Gemini, ChromaDB, Google Sheets

Additional builds: ESPCam coin counter (OpenCV), NeoPixel systems, alcohol detection + engine lock, golf swing analyzer (IMU), and several embedded learning projects.

TECHNICAL SKILLS

Embedded & Hardware: ESP32, Arduino, STM32, Raspberry Pi, LoRa, ESP-NOW, GSM/M2M, MQTT, RS485, UART, SPI, I2C, BLDC motors, stepper motors, ESCs, relays, SSRs, solenoid valves, linear actuators, basic PCB design, soldering

Mechanical Design: Onshape (primary), Shapr3D, production CAD, FDM 3D printing, manufacturing SOPs, mechanical system architecture

Software & Backend: Python (Flask), JavaScript (React), Firebase, Supabase, PostgreSQL, pgvector, n8n, AWS (VPS/MQTT), Cloudflare Pages, REST APIs

AI & Tooling: RAG systems, vector embeddings, OpenRouter, Gemini API, n8n automation, prompt engineering, AI-assisted system architecture

Languages & Coding Approach: C, Embedded C (primary) — Python, JavaScript (AI-directed, systems architecture level; used to ship Compass, Neuron, and Fubotics backend in production).

EDUCATION

B.E. in Electronics & Communication Engineering 2021 – 2025

Rajarajeswari College of Engineering, Bengaluru • VTU • CGPA: 8.68 • First Class with Distinction

Pre-University Certificate (PCM + CS) 2019 – 2021

S.G.P.T.A PU College, Bengaluru • 511/600 • Distinction

SSLC — Karnataka Secondary Education Examination Board 2019

Vidyaniketan Public School, Bengaluru • 88.80%

OTHER

- Founded VoltHub robotics club at Rajarajeswari College of Engineering — ran 60+ student sessions, launched with 14 cars racing on day one; selection was merit-based through project submissions
- Partnership Director, Rotaract Club of Bangalore — managed sponsor relationships, fundraising, and event execution for community-facing initiatives
- Treasurer (2 years), Rotaract Club of Rajarajeswari College of Engineering — managed club finances, budgeting, and fund allocation
- Active LinkedIn presence documenting real engineering work: [linkedin.com/in/nishanth-k-b0b0b2250](https://www.linkedin.com/in/nishanth-k-b0b0b2250)

LOOKING FOR

Embedded systems / robotics roles at hardware-first startups where I can continue building production systems end to end — hardware, firmware, and backend.