SATHASIVAM K

EMBEDDED SYSTEMS ENGINEER

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PROFESSIONAL SUMMARY

Final-year Electronics & Communication Engineering student and Embedded Systems Engineer with hands-on experience in custom PCB design, firmware development, and IoT hardware prototyping. Capable of building end-to-end products, bridging low-level C/C++ firmware architectures with cloud-native web platforms.

EDUCATION

Trichy Engineering College

4th Year

B.E. Electronics and Communication Engineering (ECE)

TECHNICAL SKILLS

Embedded & Hardware	ESP32, C / C++, FreeRTOS, PCB Design (KiCad), Sensors & Actuators, Wireless Protocols
Software & Cloud	SvelteKit, Cloudflare Workers, Cloudflare D1, Tauri v2, Firebase, REST APIs
Tools & Workflows	Git / GitHub, PlatformIO, Rapid Hardware Prototyping

HARDWARE & PCB DESIGN EXPERIENCE

- Designed schematics and manufactured custom Printed Circuit Boards (PCBs) for multiple embedded systems and robotics applications.
- **Bare Module Integration:** Engineered and routed custom PCBs explicitly utilizing **ESP32 bare silicon modules**, directly managing power regulation, antenna clearance, and trace routing on-board to optimize physical space and minimize hardware cost compared to standard development kits.
- **Custom PCB Implementations:** API-Based Fingerprint Attendance System, GridSense Power Monitor, Braille Project, Line Follower Robot, and Array Sensor Module.

FEATURED EMBEDDED PROJECTS

API-Based Fingerprint Attendance System

- Designed and developed a complete attendance product prototype end-to-end, covering custom hardware design and a full software stack.
- Engineered a real-time firmware architecture for reliable, low-latency device-to-cloud communication.
- Built a REST API-based backend on Cloudflare Workers with a Cloudflare D1 database and a SvelteKit Progressive Web App (PWA) for real-time tracking and device management.

GridSense — Smart Power Grid Monitoring System

- Designed a Master-Slave ESP32 hardware architecture with NRF24L01 wireless links for distributed grid monitoring.
- Implemented real-time voltage and current sensing for live power-quality monitoring and analysis.

SOFTWARE & FULL-STACK PROJECTS

Toro Eruthukattu App on Google Play

Bull Racing Platform

- Built a cross-platform application utilizing Tauri v2 and SvelteKit, integrating Firebase authentication and a Cloudflare Workers backend.
- Engineered instant Over-The-Air (OTA) UI updates via Cloudflare Pages to maintain application reliability.
- Developed a live results system featuring real-time API integration and print-optimized PDF exports for event management.

Kallapotti

Multi-Tenant Billing Software

- Built a scalable platform backed by Cloudflare D1, managing complex data structures for retail and wholesale.
- Engineered variant batch-level pricing logic alongside a dynamic image-generation pipeline.

EduToolz

College ERP

- Developed a multi-tenant college ERP and fee-management Software as a Service (SaaS).
- Implemented a secure, single shared-database isolation architecture running on Cloudflare Workers and D1.

ACHIEVEMENTS

- **1st Place** — Project Expo, Shivani Engineering College
- **1st Place** — Project Expo, Sri Ramakrishna Engineering College
- **3rd Place** — Project Expo, KPR Engineering College
- Participated in multiple additional technical project expos, symposiums, and engineering competitions to present prototype developments.