Rajarajan R

Electronics & Communication Engineer | Hardware Design & Embedded Systems

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PROFESSIONAL SUMMARY

Electronics and Communication Engineer with hands-on experience in embedded systems, PCB design, hardware troubleshooting, and automotive electronics validation. Skilled in Altium Designer, KiCad, STM32/ESP32 interfacing, CAN/LIN diagnostics, and EMC/ESD testing. Published two journal papers on embedded and IoT systems. Seeking Hardware Design Engineer / Embedded Systems Engineer roles.

TECHNICAL SKILLS

EDA & Design Tools: Altium Designer, KiCad, LTspice

Hardware & Circuits: Analog/Digital Circuit Design, Schematic Capture, 2–4 Layer PCB Layout, Power Supply Basics (LDO/DC-DC), MCU Interfacing (STM32/ESP32)

Protocols & Interfaces: I^2C, SPI, UART, USB, GPIO, CAN, LIN

Programming & Languages: Embedded C, C++

Lab & Debugging: Oscilloscopes, Digital Multimeters, Signal and Function Generators, Board Bring-Up, SMD Soldering, PCB Troubleshooting

Compliance & Protection: EMI/EMC and ESD Fundamentals, EMC Immunity Testing

Automotive Validation: Vector CAN/LIN Tools (VectorXL, CAN Analyzer, BusMaster), Climatic Chambers, Vibration Shaker Systems, Test Reporting

IoT & Web: IoT Prototyping, Sensor Integration, MERN Stack (MongoDB, Express.js, React.js, Node.js), HTML/CSS, JavaScript

PROFESSIONAL EXPERIENCE

Graduate Apprentice Trainee Dec 2025 – Present
Pricol Limited — Product Reliability Assurance (PRA) Lab

- Performed electrical and EMC immunity testing, including power line/signal transient and ESD testing (powered and unpowered), on automotive components to verify compliance with national and ISO standards.
- Interfaced instrument clusters with test systems using Vector CAN/LIN tools (VectorXL, CAN Analyzer, BusMaster); verified CAN bus inputs and cluster telltale outputs.
- Executed environmental and endurance validation (thermal shock/cycling, hot/cold storage, humidity, salt spray corrosion, water ingress) using Weiss Technik and Envisys climatic chambers.
- Conducted vibration (sine, random, combined with temperature), shock, bump, and resonance testing on Spectral Dynamics and IMV shaker systems.
- Carried out pre- and post-test functional checks on instrument clusters (speedometer, tachometer, gauges, warning indicators) and sensors (fuel level, pressure, temperature); analyzed customer requirements and prepared detailed test reports.

Embedded Systems Developer (Intern) Mar 2025 – Jul 2025
Pantech Solutions

- Designed and implemented microcontroller-based embedded system solutions; integrated sensors and developed firmware in Embedded C/C++.
- Supported hardware prototyping, debugging, and PCB troubleshooting for embedded product development.

MERN Stack Development with UI/UX (Intern) Jun 2025 – Dec 2025
KGiSL Microcollege

- Developed and maintained full-stack web applications using the MERN stack (MongoDB, Express.js, React.js, Node.js).
- Collaborated on UI/UX development and delivered responsive interfaces using HTML, CSS, and JavaScript.

Internet of Things (Intern) Mar 2024 – Apr 2024

IXAR Robotic Solutions & Teachnook

- Built and deployed IoT prototypes integrating sensors, wireless communication modules, and cloud connectivity.
- Gained practical exposure to IoT system architecture and real-time data acquisition pipelines.

TECHNICAL PROJECTS AND PUBLICATIONS

Lorash – Smart Lawn Mower (Final Year Project) Published: IJRTI, Vol. 10, Issue 4, Apr 2025

- Designed and developed an autonomous, solar-powered lawn mowing robot featuring obstacle avoidance, multi-sensor module integration, path planning, and a dual-function spraying mechanism.
- Integrated Bluetooth control, cutting and spraying mechanisms, and driving control to minimize manual labor and reduce health hazards for agricultural workers.
- Published in International Journal for Research Trends and Innovation (ISSN: 2456-3315, Impact Factor: 8.14); DOI: IJRTI2504056. https://ijrti.org/viewpaperforall.php?paper=IJRTI2504056

Gate Pass Management System (Arduino & RFID) Published: IJFMR, Vol. 6, Issue 5, Sep 2024

- Developed an RFID-based digital gate pass system to replace paper-based processes for institutional access control, improving security and administrative efficiency.
- Implemented a role-based access model with real-time database pop-ups for security personnel, significantly reducing paperwork and turnaround time for gate pass approvals.
- Published in International Journal for Multidisciplinary Research (ISSN: 2582-2160, Volume 8 Issue 5); https://www.ijfmr.com/research-paper.php?id=27464

Seapilot WaveMastery – Bluetooth-Controlled Flood Relief Boat Arduino UNO | HC-05 | L298N

- Engineered a low-cost, Bluetooth-controlled amphibious relief boat using Arduino UNO, HC-05 module, and L298N motor driver for deployment in flood-affected disaster zones.
- Designed a lightweight rigifoam structure for buoyancy and enabled precise motor control via serial Bluetooth communication for remote aid delivery and rescue operations.

Smart Firefighter Bot Arduino | Sensors

- Built an Arduino-based environmental monitoring system for firefighting scenarios, integrating air quality sensors and temperature detection modules.
- Delivered real-time environmental data to help firefighting teams make informed tactical decisions, enhancing personnel safety and operational effectiveness.

EDUCATION

B.E. Electronics & Communication Engineering 2022 – 2025

Sree Sakthi Engineering College | CGPA: 7.9 / 10

Diploma in Electrical & Electronics Engineering 2019 – 2022

Sri Ranganathar Institute of Polytechnic College | Percentage: 91.1%

CERTIFICATIONS

- Advanced C++ – Simplilearn
- IoT-Based Embedded Systems – Vei Technologies Pvt. Ltd.
- CCNA: Cisco Certified Network Associate – TNSDC
- Internet of Things Applications – Infosys
- 4G/5G Communication Networks – TNSDC
- UI/UX Development – KGiSL Microcollege

ACHIEVEMENTS

- Best Outgoing Student (All-Round Excellence) – issued by Dr. A. Kaliyamurthy (Former SP), SSEC Annual Meet 2025
- Best Student Active Contribution – issued by Dr. C. Sylendra Babu (Former IPS), SSEC Annual Meet 2024
- Best Outgoing Student (All-Round Excellence) – issued by Dr. V.N. Narayanasamy (Sri Institution Chairman), SRIPC Annual Meet 2022