

# MOTHI CHARAN NAIK DESAVATH

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## SUMMARY

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ECE graduate with 2+ months of industrial internship experience at Vizag Steel Plant, programming PLC control systems managing 6 sensors across live production environments. Built 5 hardware prototypes spanning embedded security, antenna design, IoT monitoring and smart card systems including Unicard, an independently conceived RFID card consolidating 4 vehicle documents into 1. Seeking an Embedded Security or Electronics Prototype role where I can contribute from day one.

## TECHNICAL SKILLS

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**Languages:** C, C++, Python, PLC Ladder Logic

**Embedded and IoT:** Arduino, ESP32, RFID, Microprocessors (8085/8086), ROS, Wireless Communications

**Tools:** Ansys HFSS, Vivado Xilinx, Proteus, Git and GitHub, Node.js, Grafana, MQTT

## EXPERIENCE

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### Intern in Microprocessors and PLCs

Vizag Steel Plant (RINL)

Jun to Aug 2024

Visakhapatnam

- Programmed PLC ladder logic automating furnace billet-handling across 6 sensors, eliminating 3 manual handoff steps and achieving zero faults across 3 control cycle validations.
- Validated hardware-software integration under continuous production load and documented control architecture for 4 plant systems using 8085/8086 microprocessors.

## PROJECTS

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### Dual-Band Microstrip Patch Antenna for WLAN

- Designed a compact rectangular microstrip patch antenna (30mm x 40mm) on FR-4 substrate targeting dual WLAN bands at 3.5 GHz and 5.8 GHz, simulated and optimized using Ansys HFSS.
- Achieved a return loss of -16.85 dB, peak gain of 4.93 dBi, VSWR of 1.18 and radiation efficiency exceeding 64% across a 150 MHz bandwidth, meeting all target performance metrics.
- Applied iterative slot and stub modifications including an inverted L-slot and vertical slot to generate dual resonance frequencies, improving bandwidth and gain over the baseline design.

### RFID Secure: Embedded Access Control System

- Built an Arduino-based door lock in C supporting 20+ RFID tag IDs; identified 2 critical vulnerabilities via threat modeling and implemented rolling-code countermeasures against replay and tag-cloning attacks.
- Produced a 3-section security audit report covering attack surface, threat vectors and countermeasures, structured for real-world security review.

### Unicard: All-in-One Vehicle Document Smart Card

- Independently conceived and prototyped a single RFID smart card replacing 4 physical vehicle documents (driving licence, RC book, insurance and pollution certificate) into 1 scannable card.
- Built on microcontroller and RFID stack with encrypted references scannable in under 2 seconds; supports cloud-based remote updates cutting document renewal time from days to minutes.

### Smart Biogas Monitor: IoT Dashboard

- Deployed real-time IoT monitoring using 3 MQ-series sensors (CH<sub>4</sub>, CO<sub>2</sub>, H<sub>2</sub>S) with a Node.js pipeline and Grafana dashboard featuring 5 configurable alert thresholds for remote safety monitoring.

### Furnace Charging Roller Table: PLC Automation

- Automated billet-handling for a steel furnace via PLC ladder logic across 6 sensors, eliminating 100% of manual roller control and improving production line consistency.

## EDUCATION

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### B.Tech in Electronics and Communication Engineering

Potti Sriramulu College of Engineering and Technology

2021 to 2025

Percentage: 64.56%

Relevant Coursework: Microprocessors, Embedded Systems, VLSI Design, Digital Signal Processing, Control Systems, IoT Applications