Saroj Chaudhary

IoT and Firmware Engineer

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PROFILE

Innovative IoT and Firmware Engineer with expertise in embedded systems, automation, and IoT integration. Passionate about developing data-driven solutions for smart systems, with a strong background in firmware development, prototyping, and electronics engineering.

PROFESSIONAL EXPERIENCE

Lecturer, *Padmashree College, Nilai University, Malaysia* 🔗   2025 – present
Kathmandu, Nepal

- Deliver lectures on IoT concepts, including architecture, protocols, and real-world applications.
- Design and assess lab-based IoT projects using microcontrollers and sensors.
- Guide students in implementing industry-relevant IoT solutions.
- Collaborating in curriculum development and evaluation processes.

IoT Engineer, *Muktinath iTech Company Limited.* 🔗   2024 – present
Kathmandu, Nepal

- Project Ideation & Development
- Data-Driven Decision Making
- Firmware & Embedded Systems for low-power systems
- IoT Integration
- Prototyping & Deployment
- Sustainability & Efficiency

IoT & Electronics Engineer, *Nepatronix Engineering Solutions Pvt. Ltd.* 🔗   2022 – 2024
Kathmandu, Nepal

- Industry-Oriented Prototyping
- Firmware & Embedded System, reduced power consumption by 20% using low-power modes
- Mentorship & Curriculum Development
- Trained 1,000+ students in IoT and Robotics, improving technical skills by 40% through hands-on workshops.

EDUCATION

Msc. in Computer Science, *Nepal College of Information Technology*   2025 – present
Lalitpur, Nepal

Bachelor in Electronics & Communication Engineering,   2017 – 2022
Nepal Engineering College   Bhaktapur, Nepal

PROJECTS

Meteorological Monitoring System
- Designed a weather monitoring system that senses key meteorological data and transmits it to a remote server, with support for battery and AC power and GSM and WiFi connectivity.

Smart Farming
- Developed an IoT-based smart farming solution integrating greenhouse automation, smart irrigation, and aquaculture systems. Designed and deployed an HTTPS-based WebApp and Mobile App for real-time monitoring and control.

Wireless Alarm System
- Designed and developed a LoRa-based alarm system using ATMega328P and SX1278 (433MHz). Integrated ultrasonic sensors for real-time water level monitoring and AC sirens for alerts.

Air Purifier System
- Developed an air purifier system utilizing the PMS5003 PM2.5/PM10 air quality sensor, HEPA filter, and AC fan. Integrated an OLED display to show real-time air quality, temperature, and humidity data. The system features automatic and manual modes, with automatic mode adjusting fan speed based on air quality, and manual mode allowing speed control via a button.

RFID Attendance System
- Engineered an RFID-based attendance tracking system using 125kHz/13.56MHz RFID cards, OLED displays, and actuators. Incorporated HTTPS-based WebApp for secure attendance logging and power backup for uninterrupted operation.

Token Caller
- Developed a queue management system using an OLED display with power backup. Integrated an HTTPS-based WebApp for token tracking and automated call announcements. Designed for hospitals, banks, and service centers.

Sanitary Pad Vending Machine
- Developed an RFID-based sanitary pad vending machine that automates dispensing using 125kHz/13.56MHz RFID cards. Designed a database system to record user usage and integrated a notification system to alert maintenance teams when stock is low. Ensured secure transactions and real-time monitoring via an HTTPS-based WebApp.

Gold/Silver Price Display Board
- Built a real-time price display system using 7-segment displays and WebSocket-based WebApp integration. Ensured secure data transmission and fast updates for financial institutions.

SKILLS

Firmware Development
- Languages:
  - C/C++, Python
- Protocols:
  - UART, I2C, SPI, MODBUS, RS485/RS232, Bluetooth/BLE, HTTP, WebSocket, MQTT, LoRa, GSM/GPRS
- Controllers:
  - Arduino Family, ESP32/8266
- Development Environments:
  - Arduino IDE, ESP-IDF
- RTOS:
  - freeRTOS

Version Control
- Github

Circuit Designing
- PCB Designing Tools:
  - Proteus
  - Altium Designer
  - KiCad
- Simulation Tools:
  - TinkerCad
  - Wokwi Simulation

Web Development
- Backend:
  - Python with Django(DRF), Node.js
- Frontend(Basic)
  - HTML, CSS, JS
- Database:
  - SQLite, mySQL, postgreSQL, MongoDB

AWARDS

Karmalaya IX, *Center for Applied Research and Rural Development, NEC*   2021
- In the project "The Pad Vending Machine".

Avigna-Best Project Award, *Everest Engineering College*   2019
- An inter-college project competition organized by Everest Engineering College for the project titled "Sonar Monitoring System".

INTERESTS

- Machine Learning, Data Science & Robotics
- Cyber Security
- Reading books and conducting experiments

OTHERS

Activities
- Freelance Product Development
- Help students in their Final year Projects
- Former member of the Robotics Association of Nepal [RAN]
- Provide counseling and guidance to IoT and Robotics enthusiasts

Strength & Soft Skill
- Team Work
- Flexibility & Adaptability
- Time management & Leadership Quality