

# UNMESH PHATERPEKAR

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## EDUCATION

### University of Colorado, Boulder, USA

August 2023 - May 2025

Professional MS in Electrical and Computer Engineering, Embedded Systems

(GPA 3.46/4)

Subjects: Embedded Systems Design, Principles of Embedded Software, Practical Circuit Board Design, Internet of Things Embedded Firmware, Real-Time Embedded Systems

### Dwarkadas J. Sanghvi College of Engineering, Mumbai, India

August 2018 - May 2022

Secured a Bachelor of Engineering in Electronics and Telecommunications with *Distinction*

(CGPA 9.57/10)

Relevant Courses: Digital Systems Design, Electronic Devices and Circuits, Microprocessor and Peripherals Interfacing, and SPA

## TECHNICAL SKILLS

- Programming Languages: C, C++, Python | Operating Systems: Linux and Microsoft Windows
- Microprocessors and Microcontrollers: 8085, 8086, 8051, ARM M0/M3/M4, NXP FRDM-KL25Z, Arduino, Jetson Nano, Bluetooth Gecko
- Software: Simplicity Studio, Cheddar, STM32CubeIDE, MCUXpresso, KiCad, Altium, Keil  $\mu$  Vision, AutoCAD, Solid Works, MATLAB and Simulink, and Gazebo

## PROFESSIONAL EXPERIENCES

### EcoSys Efficiencies Private Limited, Mumbai, India

May 2020 - July 2020

#### IOT System Development Intern | Google Firebase, Altium, Sublime Text

- Gathered live data from the warehouse and saved the data to Firebase through the Console for inventory logging
- Constructed a web page with HTML, CSS, and JavaScript to exhibit the provided information and converted the project data specifications into appropriate data structures.
- Engineered hardware solutions to identify discrepancies in the warehouse utilizing motion sensors and established an anti-theft system

## ACADEMIC PROJECTS

### Agricultural Automated Irrigation System | STM32 Cube MX, PuTTY, KiCad

- Engineered an irrigation setup with UART-based Modbus at 9600 bps, reducing fertilizer and water usage by 20% and 30%, improving crop yields
- Developed an advanced irrigation system with UART at 115200 bps, increasing dispensing accuracy by 40% and nutrient efficiency by 25%, promoting sustainable and efficient farming

### Smart Security System | MCUXpresso IDE, State Diagram, LogicPort

- Designed a security mechanism with a PIR sensor, achieving 95% accuracy in unauthorized access detection and reducing false alarms by 30% through hand gesture authorization
- Employed a GPIO-based interface for the PIR Obstacle Sensor and the I2C protocol for managing the ZX Gesture and Motion Sensor. Any unauthorized entry triggers an alarm to alert the user

### Water Reservoir Management System | Arduino IDE, Spyder, and Android Studio

- Crafted a setup utilizing micro controllers and sensors, which improved reservoir water level detection with 90% accuracy, facilitating automatic communication for redistribution during shortages
- Established a functional reservoir setup incorporating a liquid sensor, Arduino UNO, relays, Node MCU esp8266, and an auxiliary application for predicting rainfall in targeted areas
- Collaborated in authoring and publishing a paper based on research

### GSM Module Based Indoor Air Quality Monitoring System | Arduino IDE, Proteus, and Octave

- Crafted a mechanism to assess atmospheric elements: temperature, humidity, and gas employing Arduino UNO and the SIM900A GSM Module
- Integrated additional components such as DHT11 temperature sensor, MQ2 smoke sensor to shut down the program if the values exceed a particular limit thus sending an SMS alert
- Jointly authored and published a research paper in DJSCE Strike Magazine for 2021 (ISBN:978-93-5437-776-1)

## EXTRA CURRICULAR ACTIVITIES

- Liaised with the Mechanical department to analyze parameters for creating simulations and operating mechanisms on the Robot Operating System (ROS) and Gazebo in real time, under the Simulations and Electronics Department
- Achieved a notable 5th place ranking in the nationwide DJSCE Robocon MATLAB competition in 2021
- Selected as the Main Controller of Robot and achieved an All-India Rank of #9 in DD National Robocon organized by ABU Robocon, 2021 for designing circuits with microcontrollers on circuit boards with Arduino DUE
- Facilitated a workshop on ethical hacking and Android app development hosted by DJS College of Engineering's Institution of Electronics and Communication-SF in 2019