Shubham Mohapatra
Embedded Systems Engineer

Contact: +91 9778461774
01shubham10@gmail.com

Career Objective

Work in a challenging environment where I can utilize my skills as an Engineer in all phases of Embedded System Product Development.

Skillset

- Rapid Prototyping
- Firmware Development
- Digital & Analog Circuit Design
- PCB Design
- Schematic Design
- Hardware Testing & Debugging
- Soldering
- 3D Model Designing
- Technical Documentation
- Component Selection & Procurement
- Inventory Management

- Communication Protocols: I2C, SPI, UART, USB, CAN.
- PCB Softwares: KiCAD, Altium.
- 3D Modeling Software: FreeCAD, Fusion-360.
- Firmware Development Platforms: FreeRTOS, nRF SDK, ESP SDK, CircuitPython, Arduino.
- Microcontroller: 8051, Atmega328, nRF52, STM32, ATtiny, ESP32, ESP8266
- Programming Languages: Embedded C, and Assembly Language.

Professional Experience

Embedded Engineer
Self Employed   *(July 2021 - Present)*
- Design & Development of IoT Products
- Design & Development of Electric Bicycle Electronics
- PCB Design, Schematic Design, Prototype Assembly
- Firmware Development - ESP32(Xtensa dual-core microprocessor), STM32(Arm Cortex-M3), Raspberry Pi

Electronics Engineer
IoTReady Technology Solutions Pvt. Ltd, Bangalore, Karnataka   *(January 2020 – June 2021)*
- Lead Hardware Designer and Developer
- Testing Firmware Development for ESP32 and nRF52 based Systems.
- Digital and Analog Circuit Design.
- Schematic design & PCB layout in KiCAD.
- **Projects: Smart UHF RFID Security System, RFID Solutions for Smart Factories, Smart Weighing Scale, Industrial Current Measurement System, and Instruments for Electrical Cable/Wire Insulations.**

Hardware Design Engineer
Zazu Wildlife Technologies Pvt. Ltd, Bangalore, Karnataka   *(November 2017 – December 2019)*
- Schematic Design & PCB Layout in KiCAD.
- Digital and Analog Circuit Design.
- Prototype Development.
- Component Selection.
- Hardware Testing & Debugging.
- 3D Enclosure Design in FreeCAD & Fusion360.
- **Projects: SenseBe, SensePi, and Arduino & Raspberry Pi based internal projects.**

Trainee (Hardware Design Engineer)
Expert Global Solutions Pvt. Ltd, Aurangabad, Maharashtra   *(April 2017 – September 2017)*
- Schematic Design & PCB Layout in Altium Designer.
- Hardware Testing & Debugging
- Prototype Development.
- Component Selection .
- Inventory Management.
- **Projects: Automatic Welding Machine, Hand Held Remote.**

Trainee Engineer
Automation and Control Systems, Pune, Maharashtra   *(August 2016 – March 2017)*
- Technical Documentation.
- PLC and SCADA Programming.

PROJECTS

Smart UHF RFID Security System

Development of a security system which connects a UHF RFID reader with an entire facility lockdown system, consisting of Electromagnetic locks for doors over BLE. The system communicates to the customers' servers to give data of time & date of security breach, with details of the property damage done, over WiFi. And the customer can view all the data and control the lockdown system on their smartphones, over both BLE and WiFi.

My role was to write the firmware, component selection, and procurement. The firmware was written over FreeRTOS in the C language. This was a prototype, presentable to customers.

Smart Weighing Scale

Development of a smart weighing scale with high accuracy and long battery life, which communicates the measured data to a mobile App, over BLE.

My role was PCB design, and to write the testing firmware.

SenseBe (Active Infrared Sensor)

Development of an Active Infrared Beam sensor which has an IR Transmitter and Receiver unit.

IR Transmitter is an STM32 MCU based circuit which can emit IR over a distance range of 5 to 20 meters. The IR Receiver is nRF52 based, Mobile App configurable Device which can be connected to DSLR Cameras.

It is used for Virtual Fencing of forests or agricultural lands and close-up Wildlife Photography.

My role in the project was Circuit Design, Schematic Design, PCB Design, Component Selection and Procurement, PCB assembly, Testing and Hardware Debugging, and 3D Enclosure Design.

SensePi (Passive Infrared Motion Sensor)

Development of a Bluetooth based Mobile App configurable, PIR(Passive Infra Red) motion sensor which can trigger a DSLR Camera. The App provides the user with options to select Sensitivity of the sensor over a distance of 2 to 25 meters of range, Wide/Narrow Angel Mode, Day/Night Mode, Timer Mode, and many such features which make photography absolutely stunning. It is also very power efficient and can run over a year on 2xAA Batteries.

This system is used by Wildlife Photographers for getting elegant close and far shots, and by Wildlife Researchers for surveillance and monitoring of wild animals. And, also used for security and protection of farm animals & farmers from the wild animals.

My role in the project was designing nRF52 based PIR motion sensor circuit, Schematic Design, PCB Design, Component Selection & Procurement, PCB assembly, Testing and Hardware Debugging, and 3D Enclosure Design.

Automatic Welding Machine

Development of a Welding machine for the Oil & Gas industry to weld oil transferring pipes in a faster and more precise manner.

I was involved in prototype development and PCB board bring up, Component Selection, PCB testing and debugging (Bench testing), and Technical Documentation.

Wireless Pick and Place Robotic Arm (B.Tech Final Year Project)

Design and Development of an 8051 MCU based, RF-controlled robotic arm with 3 Degree of Freedom (D.O.F). The arm can move around 360 degrees in all 3 axes and pick & place metallic objects.

It consists of 3 DC Motors, a Magnetic End-Effector, a 3x3 Matrix Keypad Controller, an Rx and Tx unit, RF communication.

Educational Qualifications

B. Tech in Electrical and Electronics Engineering

Graduated in 2016 from Gandhi Institute for Technological Advancement (GITA), Bhubaneswar with a CGPA of 7.99 out of 10.

Higher Secondary Education (Science, CBSE Board)

Passed out in 2012 from Kendriya Vidyalaya, CRPF Campus, Bhubaneswar with 70.60%.

Secondary Education (CBSE Board)

Passed out in 2010 from Kendriya Vidyalaya, CRPF Campus, Bhubaneswar with 81.70%.

Declaration

I hereby declare that the above information is true and correct to the best of my knowledge.

Place : Bengaluru, Karnataka

Date :   **Shubham Mohapatra**