Navadeep Ganesh U

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Education

M S Ramaiah University of Applied Sciences Bengaluru, KA
B.Tech., Electrical and Electronics Engineering (Grade: 8.8/10) *2019 – 2023*

Experience

Embedded Systems Intern (Aug'20 – Nov'21)
Praan Technologies

- Designed full-stack embedded hardware board including Sensor, Processing, Connectivity and Power units.
- Assessed, designed high-voltage generating charge multiplier circuitry and PCB for air purifier application.
- Developed software libraries for integrating Weather API and Battery State-of-Charge monitoring features.

Summer Research Intern (May'21 – Aug'21)
EECS Dept., IISER Bhopal *Guide: Dr. Mitradip Bhattacharjee*

- Interfaced 4 types of temperature sensors onto a microcontroller, logged the live data onto MS Excel for analysis.
- Analysed the responses of sensors for a common temperature swing and compared, corrected the distortions.
- Developed a smartphone app to receive the individual sensor data via USB OTG and Bluetooth connection.

Undergraduate Research Intern (Sep'20 – Feb'21)
Centre for Energy, IIT Guwahati *Guide: Dr. Gaurav Trivedi*

- Modelled home appliances using PSCAD for simulating distributed electrical networks.
- Worked on electric load dataset of IITG, performing linear regression for load analysis using Python.
- Explored ways to optimise energy generation and consumption using load profile analysis in Homer Pro.

Hardware Engineering - IoT (Mar'20 – Aug'20)
GramWorkX

- Designed embedded circuitry and custom PCB for the Agricultural IoT device.
- Integrated multiple environmental sensors and captured data for testing.
- Contributed a Medium article on "Sensors for Agricultural Utility".

Projects

AgriBot | *Arduino, Motor Control, Sensors, IoT, CAD* [link] (Nov'19 - Feb'20)

- Modelled and developed a multipurpose field bot that can perform environmental sensing and actuating tasks.
- Implemented on-system WiFi connectivity for posting sensor data and Bluetooth link for operating the bot.
- Sensor data is visualised and monitored using Thingspeak cloud and analysed with MATLAB.

AquaLoop | *OpAmps, DAC, Signal Conditioning* [link] (Feb'21)

- AquaLoop is a 4-20mA current loop based water level indicator for long distance signal transmission.
- Designed with discrete components like Transistor, OpAmp, Comparator and R2R ladder network.

DigiStep | *PSoC4200, Digital Logic, Counters, Motor Control* [link] (Feb'21)

- Designed a Stepper Motor Controller using configurable digital blocks in PSoC4200 device.
- Implemented a Johnson Counter for generating motor coil activation sequence.

OpenSource Projects | *MicroPython, Arduino, BLE, GSM* (Apr'19 – Present)

- Miniature BLE automation with nRF52811 BLE chipset using unique serial commands via mobile app.
- Interfacing PMOD NAV with Arty-S7 FPGA using Microblaze soft core processor.
- Wrote a 4 part series on using MicroPython programming with Espressif chipsets.

Relevant Courses taken

- FPGA Based Embedded Systems - Covering Swadeshi Microprocessors, **NIELIT India**
- Electric Vehicles: Plugging into Smarter Energy Management, **Schneider Electric.**
- Programming for Everybody - Getting Started with Python, **Coursera**
- Data Structures and Algorithms Training Session, **Coding Ninjas**
- Introduction to FPGA Design for Embedded Systems, **Coursera.**
- Introduction to Embedded System Design, **Swayam - NPTEL**
- RF Fundamentals - Basic Concepts and Components, **Rahsoft**
- Microcontrollers and Programming in C, **Udemy**

Interests And Technical Skills

Embedded Systems, Hardware Design, Analog and Power Electronics, Sensors

Languages: C, Python.
Embedded Systems: ARM Cortex/AVR MCUs, Espressif/ZYNQ SoC, Xilinx FPGAs.
Software Tools: MATLAB/Simulink, Xilinx Vivado/Vitis, STMCube IDE, TI CCS, Segger Studio.
Design Tools: Eagle EDA, LTspice, NI Multisim, Keysight ADS, PSCAD.
Others: Git, LaTeX, WordPress, PowerDirector, Fusion 360.

Recognitions and Involvements

- Element14 RoadTest Program (tested and reviewed Infineon BLDC Shield, Nordic Semi BLE Kit, Trinamic Stepper Driver and MotionPy Board, Analog Devices PMIC Kit)
- IEEE Student Member - **(IEEE Sensors, Electronic Design, Power and Energy Societies)**
- Digital Fever - Project14 First Place Winner, **Element14 Community Contest**
- Thinkerig Electronics Design - Second Prize Winner, **TechTatva** - MIT Manipal
- Optimus Omnium Challenge - First Prize Winner, **Aadhya Techfest** - RUAS
- NPTEL MOOC Test - MSP430 Winner, **TI University Program**
- The Best Student RoadTester of 2021, **element14 Electronics**