**Prashant Gandhi**

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**OBJECTIVE:**

To secure internship as a Software Engineer and contribute in projects that leverage deep C/C++ and embedded programming skills.

**EDUCATION:**

**M.S. Computer Engineering, Specialization in Embedded Systems,** (Est**.** May 2020)

San Jose State University, San Jose, CA, GPA: 3.82

**B.Tech Electronics and Communication,** June 2017

Nirma Institute of Technology, Nirma University, Ahmedabad, India.

**Relevant coursework**: Operating Systems Design, Data Structures and Algorithms in C++, Embedded Software Design, Embedded Software Application, Computer Architecture

**SKILLS:**

* **Computer Languages**: C, C++, Algorithms and Data structures, Python (Beginner), Embedded C
* **Software**: Multisim, Proteus, Keil uVersion, IAR Embedded Workbench, Eclipse, PyCharm, Diptrace (PCB Design), MCUxpresso IDE, EAGLE
* **Hardware:** Arduino, SJ-One board, Raspberry pi 3 b+, LPC1769 module, ez430-RF2500 module
* **Operating Systems**: Windows, Linux, FreeRTOS (Real-Time OS)
* **Distributed version control tool**: GitHub, GitLab
* **Unit testing**
* **Communication Protocols:** SPI, UART, CAN, I2C

**WORK EXPERIENCE:**

**GELCO ELECTRONICS PVT. LTD,** Gandhinagar, India, October 2017 – April 2018

***Intern***

* **About Company:** Gelco is a manufacturer of quality agricultural electronic controls for motors and submersible pumps, to household electrical equipment’s to commercial applications for industries (switch gears).
* Designed **Three Phase Star-Delta Motor Starter Panel** using **PIC microcontroller** and effectively optimized C programming logic.
* Designed Voltage sensing and Current Sensing circuit using **OP-AMP** and simulated on **Proteus.**
* Gained experience from writing **ADC Driver** for PIC microcontroller in **C language**.
* Used implemented ADC driver to detect excessive voltage and current from supply to prevent motor damage.
* **Report:** <https://github.com/prashantgandhi27/Internship_report/blob/master/Gelco_Internship_Report.pdf>

**PROJECTS:**

**Autonomous RC Car** Spring 2019

* **Objective:** In group of 8 students,designed and constructed self-driving RC car which accepts destination coordinates from Android application using SJ-One board which has Cortex-M3 microcontroller.
* Used **CAN** bus protocol for communication between different modules and **FreeRTOS** operating system.
* **Contribution:** Designed PCB for car in **Diptrace** software and made it 90 percent wireless.
* Implemented **C++** and **C language** code in FreeRTOS for Adafruit ultimate GPS module to do parsing, to calculate Heading angle and bearing angle of car with help of **Compass11** data. Wrote **DBC file** for the same.
* Implemented algorithm to calculate shortest distance between destination and current position of RC car.
* **Outcome:** From this project we learned CAN communication protocol, how to write DBC file, how to write C++ code with FreeRTOS periodic schedular, how to create C wrapper to access C++ files, write test cases for code in **unit testing** framework.
* **Report**: <http://socialledge.com/sjsu/index.php/S19:_Tech_Savy>

**Drive stepper motor using Raspberry pi 3 B+,** Spring 2019

* **Objective**: In group 2 students, use ADC IC to convert potentiometer analog reading to digital and based on that reading, Raspberry pi generates PWM signal and sends it to motor driver to drive stepper motor.
* **Contribution:** Wrote compenstation function in **C language** for ADC reading to remove error and for ADC data validation wrote fft (Fast Fourier Transformation) algorithm in C.
* Wrote PID controller algorithem for stepper motor and used that data to generate PWM signal. Used LSM303 accelerometer to for feedback loop.
* **Outcome:** learned about ADC driver for Raspberry pi, Proportional-Integral-derivative(PID) control loop to drive motor without noise, how to generate PWM signal using Raspberry pi.
* **Report**: <https://github.com/prashantgandhi27/Graduate_Project_Report>

**Wireless Sensor Networks** Fall 2018

* **Objective**: In group of 4 students, construct wireless network using **SJ-One board** which measures temperature, humidity, pressure and air quality of room.
* **Contribution:** Designed circuit schematic and PCB in **EAGLE**. Wrote ADC Driver in **C++ language** for **Cortex-M3** to read gas sensor (MQ135) output and used implemented **SPI Driver** to read BME280 temperature, pressure sensor output in **Eclipse** and used **FreeRTOS** operating system.
* **Outcome:** At the end of this project we were able to write SPI, UART drivers to integrate sensors with SJ-One board using FreeRTOS operating system.
* **Report**: <http://socialledge.com/sjsu/index.php/F18:_Wireless_sensor_network>

**Internet of Things (IOT) based baggage tracking** Fall 2016

* **Objective**: In group of 3 students, create wireless network using ez430-RF2500 (MSP430 microcontroller) module which can track moving baggage and show location on computer.
* **Contribution:** Implemented C language program to construct hopping scheme which sends location of moving module to main master computer and this implementation was done in IAR embedded workbench IDE.
* **Outcome:** we successfully created networking using hoping algorithm to detect moving module in C language.
* **Report**:<https://github.com/prashantgandhi27/Undergrade_Project_reports/blob/master/IOT_Baggage_tracking_report.pdf>

**EXTRA CURRICULUM ACTIVITIES/ACHIEVEMENTS:**

* Won first prize in Analogism in NU-Tech 2016.
* Active member of Rotary Club of Nirma University.
* Collected paper waste from neighborhood, raised fund from selling it and bought text books for poor children with the help of NGO -Make a Difference.
* Worked as a tutor in Ahmedabad Municipal School as a part of NGO (YUVA Unstoppable).

**INTERESTS:**

* Reading, Travelling, Swimming