Dhawal Hasmukh Dedhiya

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EDUCATION

North Carolina State University, College of Engineering **Raleigh, NC**
Master of Science in Electrical Engineering with *GPA 3.33/4* December 2018
Relevant coursework: Automated Systems Engineering, Embedded System Design, Mechatronics, Python in Engineering

K J Somaiya College of Engineering **Mumbai, IN**
Bachelor of Engineering in Electronics and Telecommunication with *GPA 7.33/10* July 2017
Relevant coursework: Microcontroller Applications, Signals and Systems, Control Systems, Image and Video Processing

WORK EXPERIENCE

HoRo, Intern, Mumbai, India **June 2016-July 2016**

- Developed an "Automatic Room Light Controller" and integrated the product into an existing system at an affordable price.
- Interfaced a Passive Infrared Sensor (Panasonic EKMC series) with an Atmega 328p microcontroller using Atmel Studio IDE to detect human motion and control the room lighting.
- Integrated a Wi-Fi Module (ESP8266) into the product to administer the system from a mobile application.
- Designed a PCB of the product circuit after successful completion of the prototype testing using PCB Design and Schematic Software(Eagle).

Robocon team KJSCE, Electronics Team Head, Mumbai, India **August 2015-March 2016**

- Secured a rank of 24 out of 104 teams in National Level ABU Asia-Pacific Robot Contest (ABU Robocon).
- Led a team of 20 members and upgraded the Arduino based electro-mechanical systems to AVR.
- Controlled the robot for the competition.

Robocon team KJSCE, Member, Mumbai, India **August 2014-March 2015**

- Secured a rank of 18 out of 100 teams in National Level ABU Asia-Pacific Robot Contest (ABU Robocon).
- Programmed Arduino microcontroller to control pneumatic and mechanics of the robot.
- Tested and maintained the electronic systems on the robot.

RESEARCH PROJECT

Testing communication protocol Modbus on the Baxter robot. **February 2018-Present**
North Carolina State University, Graduate Researcher

- Interfacing Allen Bradley PLC (CompactLogix L24ER) and collaborative robot Baxter (Rethink Robotics) to communicate on industrial communication protocol (Modbus) and accomplish a set of tasks. **(RSLogix 5000, Allen Bradley PLC)**

ACADEMIC PROJECTS

PID based line following robot: Designed a PID controller to improve the performance of a line following EV3 bot and developed an ultrasound sensor to perform parking and platooning tasks using MatLab. **(PID, MatLab)**

Voltage data logger: Demonstrated a programmable analog voltage data logger using ADC, serial communication(UART) and command line interface on microcontroller having ARM Cortex M0+ processor. **(Embedded C, KL25Z microcontroller)**

FSM-based microSD card reader: Developed finite state machines to execute concurrent tasks of reading and writing data on a microSD card. Achieved an improvement in the response time of the processor by 10 times. **(Embedded C, KL25Z microcontroller)**

MicroSD card reader using ISR and RTOS: Upgraded a microSD card reader and writer code to improve the response time and optimize the CPU utilization using Interrupt Service Routines and RTOS (CMISIS-RTOS2). **(Embedded C, KL25Z microcontroller)**

Digital control for lighting: Implemented various control techniques (Bang-Bang, Incremental, and PID) to emulate a given current profile. Analyzed CPU utilization and quality of control for the different control techniques. Integrated microcontroller hardware peripherals to reduce the error and optimize the control. **(Embedded C, KL25Z microcontroller)**

Sun tracking two-axis solar panel: Constructed an automatic dual axis solar tracker to increase the efficiency of the solar panels by 20% using LDR sensors and Servo Motors. (**Senior year project, Embedded C, Arduino)**

Brain tumor detection using MatLab: Devised and implemented an algorithm to detect tumors in brain MRI scans on MatLab using basics of image processing. **(MatLab)**

Home Automation: Interfaced a Bluetooth module with an Arduino to control lights wirelessly. **(Embedded C, Arduino)**

TECHNICAL SKILLS

- Embedded C
- PLC ladder logic
- Python
- Notepad++
- AVR
- RSLogix 5000
- Arduino IDE
- FRDM KL25Z ARM microprocessor
- Atmel Studio
- MatLab
- Simulink
- Eagle