Yogesh Sapkota

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Education

Youngstown State University Youngstown, OH

- Masters of Electrical Engineering, GPA 4.0 — May 22 - Dec 23
- Bachelors of Electrical Engineering, GPA 4.0 — Aug 18 - May 22

Skills

- **Programming** : C, C++, Python, Git, VHDL, FreeRTOS
- **Software** : MATLAB, Simulink, PSpice, KiCAD, Fusion 360, STMCube IDE, Xilinx Vivado,Code Composer Studio, Quartus Prime
- **Hardware** : TI's microprocessors, STM32, Arduino, FPGA, ESP32, Raspberry Pi, Power Analyzer and Curve Tracer

Experience

Electrical and Computer Engineering Department Youngstown, OH
Graduate Research Assistant May 2022- Present

- Study the performance of FPGA-based Motor drive for Three-Phase Induction Motor
- Design and debug variable frequency Sinusoidal Pulse Width Modulation (SPWM) driver written in VHDL using Xilinx Vivado and implemented on Arty A7 FPGA Development Board
- Research about components like inverter modules, power resistors, isolators to setup and test the SPWM implementation in a 200 W induction motor
- Guide freshmen and sophomore level students through their laboratory assignment for instrumentation and computation labs to familiarize them with test bench equipment like Oscilloscope, Function Generator, Programmable DC Power Supply, Digital Multimeter
- Collaborate with other students in firmware development of a custom sensor tag board with integration and debugging of code for three different sensors, writing SPI driver for ADXL343 accelerometer

Pump and Motor Division, Parker Hannifin Youngstown, OH
Engineering Intern, Research and Development Jun 2021- Aug 2022

- Perform endurance and performance tests on pumps based on product specifications, analyze test stands readings and characterize and document the nature of faults in pumps and motors
- Build custom circuits in prototyping boards, update and document schematics of changes to the existing circuits
- Implemented custom interfaces in the PanelView application based on the feedback of technicians and assisted in the implementation of electronic controls in the test stands

Electrical and Computer Engineering Department Youngstown, OH
Undergraduate Research Assistant May 2022- Dec 2023

- Designed and 3D printed CAD models to house different configurations of strain gauge sensors using Fusion 360
- Designed interface circuits with Arduino Uno and Nano, HX711 ADC Breakout module, Test Stand, and sensor prototypes
- Documented the behavior of different sensor housings through performance and repeatability testing, plotted the prototype readings and analyzed the data using MATLAB
- Developed a procedure to test inductive probes used in Total Indicator Runout applications, and analyzed the performance of ADCs used in industrial applications based on interface circuit readings using Python scripts

Projects

- **Senior Design Project :** Programmed ESP32 using ESP-NOW protocol to establish two-way communication between the controller and LEDs on the battlebot, programmed a touch-display to control the LED patterns
- **Stepper Motor Driven Toy Car :** Programmed T4MC123GH LaunchPad in C to read ADC inputs from joystick to control the speed and direction, and assembled a makeshift toy car with two stepper motors, motor drivers and joystick module
- **Data Structures and Objects :** Developed and implemented Sudoku Solver, Word-ladder finder, and Pathfinder in C++
- **Digital Circuit Lab Assistant :** Designed and simulated digital circuits using VHDL on Quartus Prime II, programmed DE-10 Lite Board to test the simulated circuits and collaborated with professor to prepare lab handouts and assisted 30 students in diagnosing problems related to Quartus II software

Course Work

Digital Signal Processing, Embedded Systems Design, Digital Design with VHDL, Controls Systems, Computer Design, Data Structures and Objects, Advanced Unix and C programming