Shovan Shakya

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Education

University of South Florida **Tampa, Florida**

Bachelors of Science in Electrical Engineering, 3.5 GPA *Spring 2025*

Skills

Languages: C, C++, Python, Verilog
Software Development Tools: Zephyr RTOS, OpenCV, Vivado, ROS2, Pytorch, Git
CAD Tools: Keysight ADS, Altium, KiCAD, Labview, LTSpice
Hardware: Oscilloscope, VNA/VSA, Spectrum Analyzer, Logic Analyzer
Certificates: Keysight Technologies RF and Microwave Level 1

Experience

Jaycon Systems **Palm Bay, Florida**

Embedded and Electrical Engineering Intern *September 2024 - Current*

- Developed STM32 firmware migration to accommodate new hardware revisions, implementing timer-based temperature logging at 2 Hz, integrating voltage-sensing reset (via PVD), and updating GPIO configurations.
- Designed a I2C master state machine using Verilog.
- Using HLS to implement FPGA based image processing on Zynq 7000 SoC.
- Designed a PCB for DIP32 socket programmer adapter for flashing firmware on 500 audio chips.
- Performed board bringup on a ESP32 based air quality monitor and electrical test on PCBAs.
- Measured reflection coefficient using VNA to test RFID antenna leakage.

Universal Creative **Orlando, Florida**

Sensor Fusion Intern *May 2024 - August 2024*

- Designed a 4-layer STM32-based PCB (2cm x 2cm) with BNO088 IMU, Ethernet SPI module and TJA1051 CAN IC, supporting up to 30V input voltage.
- Developed STM32 firmware in C for IMU interfacing over I2C, communicating with other STM32 modules via CANBUS, and transfer IMU data to a computer using UDP via Ethernet SPI.
- Created a Python application to synchronously record pose and camera data on a multi-stereo camera ROS platform.
- Created and tested a 1D Bidirectional CNN model for hand gesture recognition using pose data.
- Applied image processing techniques to detect cutouts on display screens to detect bugs and verify manufacture quality.

Monterey Bay Aquarium Research Institute **Moss Landing, California**

Computer Vision Intern *June 2023 - August 2023*

- Developed OpenCV based realtime disparity and distance estimation tool for fisheye stereo cameras with accuracy range of 5 meters (+- 300 mm) for desktop and VR.
- Used multiprocessing to perform disparity and tracking in parallel.
- Integrated FathomNet YOLOv5 deep sea organism tracking model with distance estimation.
- Used Sockets to send realtime frames, and distance information between Python OpenCV application and Unity VR.
- Added head tracking based pointer for a pilot-friendly User Interface for a in house VR Unity application.

Projects

Indoor Tracking IMU and ToF with NRF52 Bluetooth **Ongoing**

- Developed IMU driver for NRF52.
- Developed sending IMU information to computer using NRF52 BLE.
- Researching and developing driver for VL53l8CX ToF sensor.

Functional Near Infrared Spectroscopy Headset (Capstone) **2024**

- Designed a FPC PCB using Altium for a multichannel emitter and diode configuration.
- Designed a 4 Layer breakout PCB using Altium with FPC connector.
- Developed a real-time, multichannel visualization and data logging application from STM32 using PyQtGraph.

RISC-V CPU on FPGA **2023**

- Designed and implemented a 16-bit CPU for RISC-V based instruction set architecture on Basys 3 (Artix-7) FPGA.
- Testbenching, synthesis, and implementation done through Vivado and Verilog.