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

Experience

Jaycon Systems **Palm Bay, Florida**

Electrical Engineering Intern *September 2024 - Current*

- Performed board bringup and electrical tests on a ESP32 based air quality monitor.
- Implemented timer based temperature logging at 2Hz in a STM32 RFID platform.
- Measured reflection coefficient using VNA. Improved PCB antenna performance by impedance matching.
- Implemented 2D Lidar and IMU based SLAM using EKF and ACML on Jetson Nano based warehouse robot platform.
- Researching and implementing Ultrawideband and IMU based tracking using NRF5340.
- Performed electrical tests on PCBAs for verification.

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 flickering and cut-outs on display screens.

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

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

- Designed a FPC PCB using Altium for a multichannel emitter and diode configuration.
- Designed a 4 Layer breakout PCB using Altium with FPC connector.
- Implementing a TFlite classification model on STM32H7.

RISC-V CPU on FPGA **Ongoing**

- 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.
- Designed and implemented a UART module on an FPGA for serial communication between the FPGA and computer.

RF Matching Circuit **2024**

- Designed and simulated single stub matching networks in ADS using the Smith Chart Utility for ideal models with fixed load impedance (5-j5 ohms).
- Implemented microstrip models using components like MLIN, MTEE, and MSUB, adapting transmission lines to substrate properties to reflect real-world factors and layout considerations using LineCalc.
- Optimized RF circuit designs by adjusting terminal impedance and quality factor (Q), enhancing bandwidth and understanding the interplay between components, layout, and network performance.