Hridya Satish Pisharady

Irvine, CA, 92617 (949) 689-5688 hridyasatishpisharadyok@gmail.com
https://github.com/hridyasatish https://www.linkedin.com/in/hridya-satish/

Education

University of California, Irvine, ***California, United States*** **Sep 2024 – Dec 2025**
Masters in Embedded and Cyber Physical Systems *GPA: 3.9/4.0*
Coursework: Embedded Systems Modelling, Wireless Sensors and Actuators, Real-Time Operating Systems(RTOS), IoT, Machine Learning

SRM Institute of Science and Technology, ***Chennai, India*** **Jun 2019 – Jun 2023**
Bachelors in Electronics and Communication with Specialization in Instrumentation *GPA: 3.72/4.0*
Coursework: Digital Signal Processing, Analog and Digital Electrical circuits, Signals and Systems, Control Systems, Circuit designing

Technical Skills

Programming Skills: C, C++, Linux, Bash, Python, Data Structures, Algorithms, OOPS, Git/GitHub
Embedded Systems: ESP32, ESP8266, STM32 (ARM Cortex-M0), Arduino, Raspberry Pi, Distributed Systems
Testing Equipment: Function Generators, Oscilloscopes, Logic Analyzers, Debuggers, Soldering, Digital Multimeters
Hardware Design: Eagle, Simulink, LTSpice, KiCAD, MATLAB, Circuit Debugging,, PCBA Schematics/Layout
Communication Protocols: I2C, UART, UDP, Ethernet, CAN, USB, SPI, TCP/IP, Bluetooth, BLE, Wi-Fi, SDIO, Cellular

Experience

Canvas Construction Inc **Jun 2025 – Sep 2025**
Electrical Engineering Intern [GitHub] *San Francisco, CA, USA*

- Designed industrial-grade **ESP32-based CAN nodes** for drywall painting robots, managing the full hardware prototyping from **schematic capture** and **PCB layout** in KiCad to **BoM optimization** and manual assembly using **SMT/THT** soldering.
- Created a robust **3.3V power supply** using **buck converters** to step down 24V inputs for the ESP32, implemented digital input protection with **MOSFETs** and analog signal conditioning with **op-amps** ensuring **EMI resilience** and **signal integrity**
- Executed **CAN bus debugging and diagnostics** for **TJA1051T transceivers** using **PCAN tools**, and validated **signal integrity** and **EMC compliance** using **LTspice**, **oscilloscopes**, and waveform-based root cause/risk analysis.

Synaptics Incorporated **Mar 2025 – Dec 2025**
Embedded and IOT Apprentice [GitHub] *Irvine, CA, USA*

- Built an embedded navigation assistant on the **Synaptics Astra AI board** running **Yocto Linux**, enabling real-time processing, strutured GPIO mapping and efficient resource utilization on low-power edge hardware tailored for visually impaired users.
- Integrated **HC-SR04 ultrasonic** sensors with haptic motor feedback driven by a **ULN2003 Darlington IC** and implemented a fall detection feature using MPU6050 which triggered a buzzer alert and logged sensor data to **CSV** files using Python.
- Used a Logitech webcam with a Roboflow-trained model converted through Synaptics **SyNAP** offline optimization. Modeled navigation state transitions in **MATLAB Stateflow** for reliable and predictable system behavior.

GradeUp **Dec 2022 – Apr 2023**
Embedded Systems Developer *Chennai, India*

- Developed real-time embedded firmware in **C** for **ESP8266 MCU**-based home automation using bare-metal programming with hardware register access to optimize interrupt handling and built a web-based user interface to monitor sensor states over Wi-Fi.
- Designed a motion-sensing algorithm using **PIR sensors** and implemented interrupt-driven logic for automated lighting control.

Projects

Light Swarm: Master–Slave Communication over Wi-Fi | *IoT Networking, Data Visualization* [GitHub]

- Developed firmware in **C** for **ESP8266** using Arduino IDE to read **photoresistor** values, control **PWM** to implement master selection logic, and broadcast sensor data via **UDP multicast** for distributed master–slave communication.
- Built a Python-based Raspberry Pi controller to log transitions into **CSV files** for real-time network monitoring.
- Visualized sensor data with **Matplotlib** in Python, demonstrating embedded networking concepts in a distributed **Wi-Fi mesh**.

Line-Following Robot | *Arduino, PID Control, PCB Design* [GitHub]

- Implemented embedded firmware in **Arduino** for a line-following robot, integrating **IR sensors** for surface detection and an **SPI-based IMU** for motion tracking, designed the **PCB in Eagle**, and ensured seamless hardware–software integration.
- Implemented actuator control using **PWM** and **H-Bridge** motor drivers with **UART** command interface for precise motor drive.
- Tuned the **PID controller** for **robust control stability** under actuator wear, battery voltage sag, and reflective surface variability, validating **sensor reliability** through repeated-cycle tests.

Canny Edge Detector | *C++, Real-Time Systems, Multithreading, DSP* [GitHub]

- Developed an **Edge Detection Algorithm** in **C++** with **multithreading** and **PREEMPT-RT Linux** patches, integrating a **Pi Camera** for real-time edge detection and achieving **98% accuracy** across 30 test images.
- Optimized performance to **30 FPS** using **DSP**-based noise filtering and utilized **CPU affinity** on Raspberry Pi's **4-core** setup to isolate real time **RT** and non -real time **NRT** tasks, improving system throughput and reducing jitter under load .

Patent

Sensor Based Physics Forceps for Tooth Extraction (Patent No. 542943) [GitHub] **Sep 2022 – Jul 2024**

- Modified the **Physics Forceps** using an **ESP32** and **FSR pressure sensor** to monitor force levels during dental procedures.
- Created a custom wearable wristband by integrating an **MPU6050** via **I2C**, providing real-time angle feedback to clinicians.
- Demonstrated embedded system integration and signal acquisition, delivering real-time alerts via **Wi-Fi** (**Blynk App**) and audio feedback for unsafe force detection, ensuring **95%** of force applications remained within safe limits during clinical testing.