

## **SANJANA WG**

ELECTRONICS ENGINEER

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### **Technical Skills**

Embedded Systems, Firmware Development, Microcontroller Programming (MicroPython, C++), PID Control, Interrupt Handling, Raspberry Pi Pico, UART/I2C Communication, RTOS, PCB Design (KiCad), Database Management, Linux System Configuration, Wearable Electronics, Grafana (Real-Time Data Visualization), STM32, Custom Microcontrollers, ARM, ROS, Gazebo & RViz

### **Professional Experience**

#### **Embedded System Engineering Intern**

Sheer Simple Laboratories INC. DBA joni | Jan 2025 – Present

- Fabricated a custom 4-layer SMD microcontroller tailored for a therapeutic wearable system, optimized for system-specific power and signal requirements.
- Engineered a novel high-accuracy EMG sensor with custom electrodes, prioritizing signal clarity and biocompatibility for comfortable wearable use, achieving a 95% signal-to-noise ratio.
- Designed and developed an IR LED-based therapeutic belt from scratch, integrating power management and control through the custom microcontroller.

#### **Firmware Intern**

Big Foundation, BMSCE | Sept 2024 – Jan 2025

- Conceptualized interrupt-based garbage collection and watchdog timer for system reliability; deployed a dual-core setup on Raspberry Pi Pico, with one core handling PID temperature and humidity control and the other managing sensor data acquisition and communication via UART to Raspberry Pi.
- Implemented PID control for precise regulation of temperature and humidity, integrated sensors for real-time environmental data acquisition, and pushed the data to Raspberry Pi for further processing and visualization.
- Hosted InfluxDB for time-series data storage, and created a dynamic Grafana dashboard for real-time visualization of temperature and humidity trends.
- Customized Linux startup files on Raspberry Pi to automatically launch and display the Grafana dashboard upon system boot, ensuring uninterrupted monitoring.
- Constructed and tested the main motherboard design with rigorous simulations, and resolved 15+ design flaws, which minimized system downtime during critical experiments.

## Education

B.E. in Medical Electronics, BMSCE, Bangalore — 2022–2026

CGPA: 8.7/10

## Achievements

5× Hackathon Winner – 1st Place: Recursive (DSCE), 1st: REVA, 2nd: Hackman (DSCE), 2nd: ImpactAI (BMSCE), 3rd: Medecode (BMSCE).

## Projects

1. Neonatal Incubator – IoT Enabled (MSME Funded Project)
  - Built a deployment-ready neonatal incubator from scratch with sensor integration, PID control, and real-time data visualization.
2. Wearable Belt for Dysmenorrhea Management (Canada Laboratory Funded Project)
  - Ideated, designed, and implemented a therapeutic belt using IR-based heat therapy, optimized for wearable use.
3. Autonomous Healthcare Robot (Ongoing)
  - Developing an autonomous robot using STM32, ROS, and Gazebo for real-time navigation and healthcare assistance.