RAJAS JOSHI

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TECHNICAL SKILLS

Programming	C, C++, Python, Matlab, Shell, Bitbake
Communication Protocols	MQTT, TCP, Modbus, UART, CAN, SPI, I2C
Embedded Systems Framework	FreeRTOS, CubeMX, Yocto,
Robotics Frameworks	ROS1, ROS2, OpenCV, Gazebo, Webots
Tools	Git, CTest, CMake, Make, GCC, GDB, Jira
Soft Skills	Adaptability, Teamwork, Time Management, Communication

WORKN /EXPERIENCE

Embedded Firmware Engineer(Remote) — **September 2023 - Present**
Embedded Firmware Engineer — **August 2021 - August 2023**
Acevin Solutions — *Mumbai, India*

- Designed and developed embedded systems for industrial automation, focusing on gas sensing, energy efficiency, and harvesting solutions.

- Built scalable, performance-optimized applications for resource-limited embedded systems using MQTT, Socket, and peripheral communication protocols.

- Architected and created custom kernel-space drivers, Board Support Packages, and Devicetree for various SoCs/SOMs from Qualcomm, NXP and Broadcom.

- Developed modular applications and peripheral drivers for ARM M4/M7 MCUs, utilizing FreeRTOS for real-time responsiveness.

- Troubleshot and debugged embedded systems, resolving hardware and software issues to improve product reliability.

EDUCATION

University of Glasgow - Scotland, UK — **Expected September 2024**
Master of Science in Robotics and Artificial Intelligence

University of Mumbai - Mumbai, India — **June 2021**
Bachelor of Electronics Engineering

PROJECTS

Heartguard — **February 2024 - Present**

- Designed and prototyped a cost-effective wearable arrhythmia detection system, combining PPG and single-lead ECG data for high-accuracy, clinically-relevant arrhythmia detection.

- Developed algorithms to analyze fused sensor data, enabling real-time arrhythmia detection.

Digital Twin of a NAO Humanoid Robot — **September 2023 - Present**

- Architected a high-fidelity digital twin of the NAO V6 robot within Webots, enabling rigorous testing of multi-agent robot soccer strategies.

- Modeled complex robot dynamics and sensor systems to ensure simulation accuracy for realistic testing of path planning, localization, and navigation algorithms.

- Facilitated cost-effective, iterative algorithm development by providing a safe virtual testbed, minimizing potential hardware damage before physical deployment.

Simultaneous Localization and Mapping — **May 2020 - July 2021**

- Developed an autonomous differential-drive robotic system for indoor navigation, implementing SLAM algorithms (Hector SLAM, RTAB-MAP) for real-time mapping and localization.

- Calibrated and fused sensor data for high-accuracy mapping, enabling reliable path planning.

- Demonstrated autonomous operation by implementing path-planning algorithms on generated maps, facilitating obstacle avoidance and goal-seeking.

PUBLICATIONS

1. R. Joshi, D. Bhaiya, A. Purkayastha, S. Patil, and A. Deshpande, "**Simultaneous Navigator for Autonomous Identification and Localization Robot**" 2021 IEEE Region 10 Symposium (TENSYMP), 2021, pp. 1-6, DOI: 10.1109/TENSYMP52854.2021.9550901