SAYYAD ABID

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EXPERIENCE

Firmware Development Intern Aug. 2024 – Present
Clean Electric *Pune, MH*
- Updated the battery management system UI, resolving critical software bugs and optimizing performance.
- Designed and implemented CAN driver and UI for Energy Management System and a 40kW rapid charger.
- Implemented a state machine for the 40kW rapid charger, capable of efficient handling of dual channel charging.
- Developed core product documentation workflow techniques improving cross-team functioning by over 80%.

Mentee (LFX Bug Fixing Fall'24) Sep. 2024 – Present
Linux Foundation *(Remote)*
- Implemented a device driver for TI ADS1262 Analog to Digital Converter, enabling its use in the Linux kernel.

Embedded Systems Intern Jan 2024 – Jun 2024
TeslaVolts *Ahmedabad, GJ*
- Designed a smart **EV charger controller with remote operation** capabilities using the OCPP 1.6 protocol.
- Prototyped an EV fast charger capable of fully charging a 150kWh battery in 40 mins, cutting charge time by 60%.
- Integrated EV to grid protocol by implementing a Control Pilot, enabling communication b/w EV and charger.
- Developed a detailed visual display system for charging details, improving the intractability of the charger.

Firmware Developemnt Intern Apr. 2023 – Aug. 2023
PKare *Bhubaneswar, OR (Remote)*
- Developed a **wearable health monitoring device** that tracked vitals, achieving a **98% accuracy** in trials.
- Integrated a Zephyr OS and optimized sensor drivers, reducing sensing delays and enhancing efficiency by 25%.
- Implemented Bluetooth stack using Zephyr RTOS for remote vital monitoring on any Bluetooth-enabled device.

PROJECTS

ADS1262 Device Driver | *C/C++, Linux kernel, Raspberry Pi*
- Developed an IIO device driver for the TI ADS1262, adding the hardware functionality to the Linux kernel.
- Implemented single-ended and multiple-ended differential channel mode for diverse ADC measurement uses.
- Enables the use of TI ADS1262 in the Linux kernel out of the box with essential functionalities embedded.

ApricotOS (W.I.P.) | *C, Makefile, Assembly, Shell, Bash*
- Modelled a lightweight bootloader with 512-byte sectors, capable of functioning out of any storage media.
- Executed 512-byte sectors' worth of I/O using real mode interrupts, **increasing hardware efficiency by 25%.**
- Exploring integration of ext4, FAT32, and NTFS filesystems through careful development and testing.

Auto Move | *C/C++, Arduino, Raspberry Pi, GPS*
- Engineered an advanced Autonomous Ground Vehicle capable of precise guidance and navigation using GPS.
- Integrated autonomous maneuvering with gyroscope and compass using the Mahony filter, reducing errors by 80%, and incorporated real-time video streaming to enable advanced object detection and classification functionalities.

Vital Watch | *C/C++, Typescript, CSS, Python, Raspberry Pi, GSM*
- Devised a real-time vitals monitoring and alarm system that minimized response time by 40% for threat detection.
- Implemented real-time monitoring for over 500 devices using MQTT, following a Publish-Subscribe paradigm.
- Integrated Geo-tagging feature, **enhancing location accuracy by 95%**, through the integration of the GPS module and Mahony filter.

POSITIONS OF RESPONSIBILITY

Next Tech Lab Sep. 2021 – Present
Robotics Research Lab, Head *Chennai, TN*
- Mentored 50+ students in embedded systems and led campus events like NTL Hacks, engaging 1000+ entries.

TECHNICAL SKILLS

Languages and Frameworks: C/C++, Bash, Python, ESP IDF, Arduino Core, SQL
Miscellaneous: RTOS ,Linux, Git, Vim, CAD, eBPF (bcc and bpftrace)

EDUCATION

SRM University Chennai, TN
Bachelor of Technology in Computer Science and Engineering *Sept. 2021 – Jun. 2025*