Siddharth Kumar Jha

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Experience

HARMAN International India Pvt. Ltd. Bangalore
Associate Engineer – Embedded C++ *Jul 2024 – Present*

- Rescued an escalated **Tier-1 OEM** project by redesigning **diagnostic recorder** and extending **CAN Data Sampler** to meet strict **real-time data collection** requirements—despite hardware constraints preventing true real-time streaming.
- Led daily technical discussions with **OEM engineers** to clarify requirements and iterated solutions, delivering a robust workaround that satisfied the customer and passed **acceptance testing**.
- Engineered a hybrid sampling logic to collect **CAN data** with accurate **timestamps** and **validity checks** from filtered **shared memory**, ensuring **80+ hour diagnostic data retention** and reliable fault detection.
- Eliminated **scheduler drift** in **CAN/Lua pipeline** that was corrupting long-run OEM scripts, restoring multi-hour data integrity.
- Reduced **gRPC** CPU usage from **30% to 5%**, preserving **TCU** headroom for safety-critical services (e.g., **E-call**) and avoiding scope reduction.
- Developed reusable **HTTP/2 + mTLS C++17** library with **eSIM-based certificate retrieval**, cutting secure comms development time across projects.

HARMAN International India Pvt. Ltd. Bangalore
Intern – Embedded C++ Developer *Dec 2023 – Jun 2024*

- Designed and implemented core **CAN Data Sampler** with multiple collection modes (simple, change-point, hybrid) and sub-second shared memory IPC, forming the backbone of production diagnostics.
- Created **Lua-based runtime scheduler** enabling configurable data processing without firmware redeploy.
- Implemented **gRPC** streaming from shared memory buffers for near-real-time diagnostics with minimal CPU overhead.

Open Source Contributions

starship – Cross-shell prompt (50k+ stars) Aug 2025

- Implemented C++ project detection in Rust, merged in v1.23.0 (PR #6570).
- Fixed Rust 1.89.0 lifetime elision warnings breaking CI builds and resolved test stalls caused by interactive GPG prompts, restoring reliable CI for all contributors (PR #6887).

Tock OS – Rust-based embedded OS (5k+ stars) Dec 2024

- Fixed documentation errors, improving developer onboarding (PRs).

auto-cpufreq – Linux CPU power manager (6k+ stars) May 2023

- Fixed Arch Linux auto-start issues and updated documentation (v1.9.8).

Technical Skills

Languages: C, C++17, Lua, Bash, Rust
Tools: GDB, CMake, Git, Codesonar, SQLite
Embedded: ARMv7l, SHM, IPC, CAN, RTOS concepts, Telux API
Protocols: gRPC, HTTP/2, MQTT, mTLS
Libraries: libcurl

Education

Kalinga Institute of Industrial Technology Bhubaneshwar, Odisha
B.Tech in Computer Science and Engineering *Jul 2020 – May 2024*