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Dear Hiring Manager,

As an Embedded Firmware Engineer at Simply Embedded, a consulting product development company, I engineered production-grade C/C++ firmware for 32-bit ARM microcontrollers, emphasizing robustness in high-reliability environments. With over three years of embedded systems development and debugging experience, I have a strong command of multi-threaded programming, hardware-software integration, and advanced troubleshooting skills using tools like JTAG debuggers, oscilloscopes, and logic analyzers.

In a recent project, I developed firmware drivers for an IoT wearable device, including key peripherals like audio (using DMA), touch, and display interfaces over SPI. Leveraging FreeRTOS in a multi-threaded environment, I coordinated the GUI with network requests to deliver dynamic user experiences. I extensively used JTAG debuggers, launching a GDB server to debug both source code and assembly level when maintaining the product's custom bootloader.

I also led a board bring-up project, integrating a new cellular device with an RFID reader. Using a logic analyzer, I identified and resolved an SPI communication issue where the RFID board's transmission exceeded the MCU's capacity, which was resolved by recompiling the RFID board's firmware. I applied agile methodologies to lead a team of three interns, delivering project objectives like developing the GUI (using LVGL) and back-end API integration as specified by the customer.

Throughout my tenure, I consistently used Git for version control and collaborated with team members on Microsoft Teams, Jira, and Bitbucket. Additionally, I utilized scripting languages like Python and Bash to automate device testing and commissioning, implementing self-testing functionality for a device test fixture. In this role I used Linux as a development environment for micro-controller projects based on: NXP, ESP32, STM32, RPi; equipping me to handle diverse embedded product development projects.

In my NSERC-funded computational number theory research, I developed efficient algorithms in C and utilized OpenMP for parallel processing to analyze Aliquot sequences. This work involved translating abstract mathematical concepts into practical code and optimizing it for high-performance Linux computing environments.

Collaborating closely with my advisor to ensure our findings were rigorous and comprehensible sharpened my ability to articulate complex technical details. This experience underpins my versatility as a developer, particularly in systems programming in diverse environments. Navigating the complexities from memory management to configuring parallel execution provided me with a foundation in efficiently managing computational resources.

Engages customers in detailed conversations, relying of a shared interest in outdoor activities to

quickly build rapport and recommend camping products.

Sincerely,

Gavin Guinn