

Gavin Guinn

221 6 Ave SE, Unit 403, Calgary, AB
gavinguinn1@gmail.com
(587) 889-9815

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Dear Matt Bennett,

Re: Application for Firmware Developer, Prospero Intergrated

I am writing to express my interest in the Firmware Developer position based in Calgary. With over three years of hands-on experience developing C firmware for embedded systems, I am confident that my background aligns well with the needs of the A/V product development team.

In my previous role, I designed and implemented firmware for IoT devices utilizing ARM micro-controllers and FreeRTOS. I developed drivers for peripherals with interfaces such as I2C, SPI, UART, and USB, gaining a keen appreciation for debugging tools like digital logic analyzers and oscilloscopes. This experience enabled me to quickly establish communication with a variety of peripheral devices, such as a DAC driving a speaker on an IoT product. My favorite projects always involved close collaboration with electrical engineering teams, a passion I hope to bring to this role.

In a recent project, I managed a significant pivot in customer requirements, designing and implementing firmware to meet revised architectural and functional requirements, along with performance and quality metrics. I worked from high-level sales presentations to break down goals into actionable Jira cards. This process required close collaboration with all stakeholders to ensure that the project scope presented a manageable timeline. I focused on reducing or backlogging tasks when necessary to keep the project on track. Personally, and as part of a team of developers, I worked diligently to develop these objectives, ensuring that we met both technical and business needs.

Being based in Calgary, I am excited about the opportunity to work onsite and directly contribute to your innovative audio and video conferencing systems. I am confident that my skills in embedded firmware, alongside my hands-on debugging and driver development experience, make me well-suited to help advance your product lines.

Thank you for considering my application. I look forward to the opportunity to discuss how I can contribute to your team.

Sincerely,

Gavin Guinn

Profile

Embedded Software Engineer with 3 years of experience developing production-grade C/C++ software for microcontrollers and Linux environments. Demonstrated success in leading teams, mentoring interns, and managing complex firmware projects from design to deployment. In my spare time I enjoy skiing in the Rocky Mountains and experimenting with generative AI. *Based in Calgary, Canada, and seeking opportunities locally, nationally, and internationally.*

Education

Bachelor of Science in Computer Science – University of Calgary

May 2018 – May 2022

President of the Computer Science Undergraduate Society, NSERC Undergraduate Student Research Award.

GPA: 3.49/4.00

Work Experience

Firmware Engineer – Simply Embedded

Jan 2021 – May 2024

- **Firmware Development:** Engineered robust RTOS C/C++ firmware solutions on 32-bit ARM microcontrollers. Professionally utilized git for version control, managed devops and releases with Jenkins.
- **Quality Assurance:** Conducted thorough unit testing and collaborated closely with the QA team to ensure high-quality firmware releases. Collaborated with Electrical Engineers in developing firmware for hardware test fixtures.
- **Peripheral Driver Development:** Developed and maintained drivers for peripherals (audio, display, touch, modem, secure element, IMU) within a FreeRTOS environment, ensuring seamless hardware-software integration.
- **Advanced Debugging Techniques:** Utilized logic analyzers and oscilloscopes to debug bus protocols (UART, SPI, I2C, CAN). Employed emulation tools like QEMU to debug and validate driver quality.
- **Mentorship and Hiring:** Led the interview and selection process for five engineering interns, providing hands-on training in firmware development and debugging to ensure they quickly became productive team members.
- **Network Programming:** Utilized TCP/IP stack and security protocols to manage secure communications. Managed LTE modem integration and SIM card provisioning, ensuring robust connectivity in diverse network environments.
- **Client Engagement:** Excelled in client interactions, from cold conversations at tradeshow (CES 23/24) to in-depth meetings during international trips. Experienced in converting customer business needs to concrete development objectives.

Research in Theoretical Computer Science – NSERC Research Award

Sept 2021 – Apr 2022

- **Mathematical Research:** Studied computational number theory under Dr. Michael J. Jacobson, using algorithms and computational methods to explore Aliquot sequences, contributing to the understanding of their statistical properties.
- **High-Performance Compute:** Developed scalable and parallel algorithms in C and OpenMP, effectively leveraging an 800GB RAM, 80-thread research cluster to optimize the computation of Aliquot sequences.
- **Comprehensive Documentation:** Produced a thorough undergraduate thesis and Doxygen-generated code documentation, providing a clear foundation for future research on Aliquot sequences.

	Skills	Tools / Libraries
Firmware	C, C++, ARMv8 Assembly, Makefile, CMake	JLink, GDB, STM32Cube, MCUXpresso
Hardware	Schematic reading, Protocols (UART, I2C, SPI)	Logic analyzer, Oscilloscope, QEMU
Software	Python, Bash, Java, Javascript, CI/CD	Git, Jenkins, GitHub, Azure, Wireshark

Retail Sales Staff – Camper's Village

May 2014 – July 2021

- **High Service Sales:** Engaged with customers to understand their requirements and recommend the best camping products.

Other Experience

President – Computer Science Undergraduate Society

Sept 2020 – Feb 2021

- **Organized CalgaryHacks 2021:** Led a 20-member volunteer team, bringing together over 700 participants and distributing \$15,000 in prizes, fostering growth in Calgary's tech community.
- **Stakeholder Communication:** Managed sales, from package development to payments, with outside sponsors. Facilitated regular meetings with the Computer Science Department to report on club activities.
- **COVID-19 Adaptation:** Successfully transitioned CalgaryHacks to a remote format, leveraging Discord and Zoom for seamless event execution, communication, and judging.