Gavin Guinn – *221 6 Ave SE, Calgary, Canada*

📱 (587) 889-9815 • ✉ gavinguinn1@gmail.com • ⊙ guinn8 • in gavinguinn

Education

Bachelor of Science in Computer Science – University of Calgary
May 2018 – May 2022

GPA: 3.49/4.00

Work Experience

Firmware Engineer – Simply Embedded
Jan 2021 – May 2024

- **GUI Development:** Rendered MQTT messages into interfaces using LVGL widgets, sending responses to the cloud.
- **Network Connectivity:** Addressed challenges with diverse cellular operators, especially network time and instability issues in the UK.
- **Testing Automation:** Created a self-testing system for PCBA peripherals, automating device commissioning and ensuring readiness for shipment.
- **Azure Debugging:** Used Azure and Python scripts to improve cloud-driven UI testing, developing extensive test cases with ChatGPT.
- **Versatile Driver Development:** Developed and maintained device drivers for key peripherals including audio, display, touch, modem, and secure elements, ensuring robust and efficient hardware-software integration.
- **Team Collaboration:** Coordinated with management and a global team across time zones.
- **Time Management:** Delivered prototype hardware under tight deadlines.
- **Remote Collaboration:** Used Jira, Bitbucket, and Jenkins for agile project management, version control, and continuous integration.
- **Intern Mentorship:** Led the interview and hiring process for engineering interns, mentored 5 interns during their 8-month internships, and managed tasks for interns using Jira.
- **Project Management:** Led a team of two university interns to successfully integrate an ST RFID reader evaluation board with an in-house development board, utilizing the onboard cellular modem for cloud data offloading.
- **STM32 PCBA Development:** Designed and integrated STM32U5 PCBA with electrical engineers, using STM32Cube for project setup and peripheral communication.
- **Firmware Debugging:** Implemented debug control with Jlink and GDB server, successfully flashing and debugging firmware on STM32U5 PCBA.
- **Advanced Debugging Techniques:** Utilized logic analyzers, oscilloscopes, and emulation tools like QEMU to debug and validate driver performance under various conditions.
- **Middleware Porting and Build Management:** Ported supplier middleware and managed makefile build system for streamlined and consistent project builds.
- **Hardware Collaboration:** Worked closely with Electrical Engineers to solve diverse problems including PCBA bring-up and hardware test automation.
- **Hardware Debugging:** Utilized logic analyzers and oscilloscopes to troubleshoot difficult bugs, especially in facilitating communication with peripheral devices.
- **Trade Show Sales:** Generated leads in high-traffic environments, engaged potential customers in technical and high-level conversations, gathered contact information, and followed up on leads.
- **Hardware Emulation:** Modified and recompiled a fork of the QEMU source to accurately emulate the Cortex-M7 platform.
- **Advanced Firmware Testing:** Intercepted real UART communication between the cellular modem and the emulated program, enabling the injection of errors in the AT command responses to test the real program's resilience to errors.

Retail Sales Staff – Camper's Village
May 2014 – July 2021

- **Customer Assistance:** Assisted customers in purchasing outdoor hard goods, from personalized multi-hour outfitting to quick assistance finding items.
- **Product Knowledge:** Utilized product information provided by brands and representatives to offer detail-oriented assistance.
- **Sales Goals:** Leveraged personal passion for hiking to develop strong customer relationships, consistently surpassing sales goals.

Other Experience

President – Computer Science Undergraduate Society
Sept 2020 – Feb 2021

- **Led Calgary Hacks 2021:** Coordinated a remote-first event with over 700 participants, awarding $15,000 in prize money.
- **Adapted Event Format:** Successfully pivoted from in-person to remote format, utilizing Discord for enrollment and communication.
- **Efficient Judging Coordination:** Managed the judging of 93 groups via Zoom within 2 hours with a meticulous plan.
- **Team Leadership:** Directed a team of 20 executives and volunteers to ensure smooth event operations.

- ○ **Stakeholder Communication:** Facilitated regular meetings with the Faculty of Science and the Department of Computer Science.
- ○ **Sponsorship Management:** Developed sponsorship packages, managed sales from initial meetings to final payments, and maintained a CRM.
- ○ **Cold Lead Conversion:** Effectively converted cold leads into sponsors through strategic communication.
- ○ **COVID-19 Navigation:** Successfully navigated society activities and stakeholder communications through pandemic challenges.
- ○ **Hackathon Link:** Calgary Hacks 2021

Project in Theoretical Computer Science – NSERC Undergraduate Student Research Award
Sept 2021 – Apr 2022

- ○ **Supervised Research:** Collaborated with Dr. Michael J. Jacobson on computational number theory, focusing on the statistical properties of Aliquot sequences.
- ○ **High-Performance Computing:** Utilized 800GB of RAM and 80 threads on the university's bigmem research cluster to compute Aliquot sequence properties up to 240.
- ○ **Code Optimization:** Systematically rewrote a C implementation, achieving over a tenfold increase in performance.
- ○ **Literature Synthesis:** Developed a deep understanding of existing statistical results on Aliquot sequences to extend and generalize their properties.
- ○ **System Resource Optimization:** Rewrote legacy code to utilize RAM over disk, significantly improving performance.
- ○ **Algorithmic Improvements:** Implemented memory compression algorithms, enabling higher bounds in numerical computations.
- ○ **Cluster Management:** Managed multi-day jobs on a research cluster using the SLURM scheduler.
- ○ **Parallel Programming:** Developed parallel code using OpenMP, addressing reentrancy issues with shared memory access between threads.
- ○ **Project Documentation:** Aliquot Sequence Project

Skills

Programming Languages	Skills	Tools
C, C++	Firmware Development, Driver Development	STM32Cube, Jlink, GDB
Python	Debugging, Automation Scripting	Logic Analyzers, Oscilloscopes, QEMU
Bash, Shell Scripting	Build Automation, System Management	Makefile, Jenkins, Bitbucket
SLURM, OpenMP	Parallel Programming, Cluster Management	Research Cluster, HPC Tools
Git, GitHub	Version Control, Collaboration	Git, GitHub, Jira