

KELVIN CREIGHTON

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Education

University of Alberta

2026

Bachelor of Science in Computer Science

Edmonton, AB

- **Focus:** Embedded Systems & Computer Architecture
- **Relevant Courses:** Computer Architecture, RISC-V Assembly, Operating Systems, Numerical Methods, Networking

Experience

Curriculum Specialist – DiscoverE

Sep 2024 – May 2025

University of Alberta

Edmonton, AB

- Analyzed Cubelets documentation and C source code to understand Bluetooth-based programming workflows and developed a script to automate code uploads across 30+ robotic modules, eliminating repetitive manual uploads.
- Updated Arduino C/C++ code for a self-leveling spoon project to support higher-accuracy gravity sensors, adapting the existing implementation to revised hardware.
- Assembled and tested introductory robotics and electromechanical STEM projects, integrating Arduino boards, servos, sensors, and circuits for classroom use.

Technology Specialist – DiscoverE

May 2024 – Sep 2024

University of Alberta

Edmonton, AB

- Provided technical support across 20+ classrooms and office environments, troubleshooting hardware, software, and A/V issues across 20+ devices.
- Simplified an employee sign-in/out system used by 20+ staff, removing 80% of redundant functions and scripts and reducing sign-in errors.
- Developed an internal inventory management system using Google Sheets and Apps Script, implementing role-based access controls and data validation.
- Identified a gap in organizational data resilience and implemented secure on-premises backups to improve disaster recovery.

Projects

Dragonshell – CMPUT 379 | C, Linux, Unix System Calls

Sep 2024 – Dec 2024

- Developed a Unix-like command-line shell in C supporting built-in commands, external process execution, and foreground/background process management.
- Implemented I/O redirection and inter-process communication using `open()`, `dup2()`, and `pipe()` to support file-based input/output and command pipelines.
- Managed process lifecycle and signal handling using `fork()`, `execve()`, `waitpid()`, and `sigaction()`, with child-process CPU time reporting and testing using Valgrind.

Dremel 3D45 Control System Replacement | Arduino Mega 2560, RAMPS 1.4, Marlin, C++ May 2026 – Present

- Replaced the failed proprietary controller of a Dremel 3D45 3D printer with an Arduino Mega 2560 and RAMPS 1.4 control system.
- Configured, compiled, and flashed Marlin firmware for the replacement controller.
- Rewired stepper motors, endstops, heater, and temperature-sensing circuitry to interface with the new control system.
- Diagnosed hardware and wiring issues using a multimeter, including continuity, resistance, and short-circuit checks during system bring-up.

Robotic Arm Simulation – CMPUT 340 | MATLAB, Linear Algebra, Numerical Optimization Sep 2024 – Dec 2024

- Developed an interactive 2D robotic arm simulation in MATLAB to calculate the joint angles needed to move the arm to a target position.
- Derived and implemented an analytical Jacobian, along with a finite-difference approximation to evaluate how changes in joint angles affect the arm's position.
- Implemented Newton's method and Broyden's method to iteratively solve for joint angles, comparing an exact Jacobian approach with a lower-computation quasi-Newton approach.

Linux AI Homelab Cluster | Debian, Linux, Networking, Tailscale

May 2026 – Present

- Built and maintained a multi-node Debian Linux cluster using repurposed hardware for development and self-hosted workloads.
- Configured SSH administration, firewall policies, Tailscale networking, and automated filesystem mounting across nodes.

Volunteering

WiCyS Cross Chapter CTF

Mar 2026

Women in CyberSecurity (WiCyS) — Edmonton Chapter

Edmonton, AB

- [Developed 9 of 27 CTF challenges](#), including binary exploitation and reverse engineering exercises involving stack and heap overflows, function pointer overwrites, and input validation.
- Designed binary exploitation challenges using return-oriented programming (ROP), libc address leaks, and control-flow hijacking; documented exploit development and debugging workflows using GDB, objdump, and binary analysis tools.
- Configured CTFd infrastructure and Dockerized challenge environments, supporting isolated execution, reproducible testing, and technical delivery for a cross-chapter competition.

Leadership

Chapter Leader – OWASP

Jan 2026 – Present

Open Worldwide Application Security Project (OWASP) — Edmonton Chapter

Edmonton, AB

- Organized a Secure Coding Tournament for 50+ participants in partnership with Security Journey, guiding participants through identifying and patching vulnerabilities in intentionally flawed code.
- Coordinated a multi-organization cybersecurity training event with CMD+CTRL Security, bringing together OWASP Edmonton, WiCyS Edmonton, and UCSC for a cyber-range experience.
- Supported delivery of CMD+CTRL's Dark Money cyber range, featuring 33 application-security challenges across XSS, SQLi, SSRF, access control, and business-logic flaws.

Vice President Events – UCSC

Sep 2024 – Sep 2026

Undergraduate Cyber Security Club (UCSC) — University of Alberta

Edmonton, AB

- Organized and supported over 5+ cybersecurity events consisting of competitions, technical talks, workshops, and community events throughout two academic years.
- Co-hosted 25+ challenges spanning web exploitation, cryptography, binary exploitation, forensics, and OSINT for UCSC's annual Capture-the-Flag competition, contributing to growth from 30+ to over 200+ participants.
- [Developed web exploitation CTF challenges](#) involving SQL injection, IDOR, credential discovery, SSH key-based access, and unauthorized data retrieval, deploying them through CTFd on Linode with Docker-containerized environments.

Skills

Technical: C, C++, Python, Bash, Linux, Unix System Calls, Git, Docker, Networking, Arduino, Marlin Firmware, STM32, RTOS, I2C, Hardware Troubleshooting, Electronics Debugging, MATLAB, Numerical Optimization, SQL, JavaScript

Professional: Problem Solving, Troubleshooting, Technical Documentation, Leadership, Cross-functional Collaboration, Event Organization, Communication