Rayner Dcunha

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Education

University of Alberta Edmonton, AB
Bachelor of Science in Computer Engineering (Software Option), Co-op *Sep 2023 – Apr 2028 (expected)*

- Relevant coursework: Data Structures and Algorithms, Object-Oriented Software Design, Software Requirements Engineering, Software Testing and Maintenance, File and Database Management, Operating System Concepts, Computer Organization and Architecture, Intro to Software Engineering, Digital Logic Design, Microprocessors

Work Experience

AI/ML Research Assistant Intern Jan 2026 – Aug 2026
Department of Electrical and Computer Engineering, University of Alberta *Edmonton, AB*

- Developed PyTorch reinforcement learning models, then a Graph-Transformer grid-reconfiguration surrogate that cut simulated power loss by 31% on average (up to 34%), AC-verified to within 0.16% of the exhaustive optimum
- Built an MCP-based agentic LLM web app (FastAPI, JavaScript, REST APIs) reaching 95.7% routing accuracy; debugged daily with Claude Code/Antigravity, keeping API-key credentials outside source control
- Co-authored ARGUS (*Computers*, MDPI, Oct 2026), an MCP-based agentic LLM architecture for grid decision support

Dean's Research Awards (DRA) Research Assistant Jan 2025 – Apr 2025
Faculty of Engineering, University of Alberta *Edmonton, AB*

- Selected for the competitive Dean's Research Awards to build a Neo4j knowledge graph of researchers, papers, and institutions, loading nodes and relationships from CSV with Cypher (LOAD CSV, MERGE) via Python
- Built a menu-driven Python tool with Cypher queries to count nodes and relations, find nodes sharing relationships or common objects, and compare pairs of nodes
- Detected overlapping research disciplines across related researchers and papers, generated society and community nodes in the graph, and exported the results to CSV; presented findings at a faculty-wide poster session

Projects

FlameoShell (GitHub) | *C, JavaScript, Unix Systems Programming (fork, execve, pipe, sigaction)* Sep 2026 – Oct 2026

- Built a Unix-like shell in C supporting process execution, two-stage command piping, and I/O redirection
- Implemented job control (bg/fg) with a struct-array job table, process creation via fork/execve, and Ctrl+C/Ctrl+Z handling via sigaction
- Built a JavaScript browser-based simulation of the shell with a virtual filesystem and simulated process/job state

Omakase or Not? (GitHub) | *Kotlin, Jetpack Compose, Material 3, Android SDK* Sep 2026 – Sep 2026

- Built an Android app that turns a restaurant decision into an interactive, probability-based experience with randomized outcomes across three response states

IEEE 33-Bus Dashboard | *Python, FastAPI, Node.js, JS/HTML/CSS, PyTorch, GNN, LLM Agents* Jan 2026 – Aug 2026

- Built the frontend (JS/HTML/CSS) with live data-visualization charts and a REST API (FastAPI, Node.js) persisting agent state in SQLite and results as JSONL for an MCP-based agentic LLM dashboard
- Designed a Graph-Transformer surrogate screening 50,751 candidate topologies in one pass, cutting decision time from 83 min to 48 s (103x), validated against pandapower across 16 operating points

IMU-Driven 3D Wheel (EcoCar) | *C, STM32 Nucleo-32, FreeRTOS, MPU-6050, UART, HTML/JS* Jun 2026 – Jul 2026

- Wrote C firmware on an STM32L432KC using FreeRTOS (CMSIS-RTOS V2) with 6 tasks and 5 inter-task queues: samples an MPU-6050 over I2C every 100 ms (WHO_AM_I check, gyro calibration) and streams readings over UART at 115200 baud
- Built a Three.js and Web Serial front end that renders a custom 3D wheel rotating live from fused accelerometer and gyroscope angles, with debounced button inputs, self-cancelling turn signals, and a 3-mode PWM headlight

Active-Ape (SillyCon Valley Hacks, 2026) | *Chrome Extension, Team of 4* Feb 2026 – Feb 2026

- Built a Chrome extension (Git branching, merge-conflict resolution, PR reviews) that locks the browser tab behind a challenge to prompt movement after prolonged sitting

LRT Accessibility & Safety Reporter (UAEC, 2025) | *JavaScript, HTML/CSS, Web Dashboard* Nov 2025 – Nov 2025

- Built a website for reporting LRT station accessibility and safety issues, with an inspector triage dashboard; placed 2nd (team of 4)

Technical Skills

Languages: Python (124 LeetCode algorithm problems), JavaScript, HTML/CSS, SQL (MySQL, SQLite; 55 LeetCode problems), NoSQL (Neo4j graph DB), Kotlin, C/C++, Java, VHDL, Cypher, Bash, ARM Assembly
Frameworks/Tools: PyTorch, Node.js, FastAPI, REST APIs, Jetpack Compose, GSAP, SVG/Canvas, Google Apps Script, pandas, NumPy, Matplotlib, Neo4j, Git/GitHub, Vercel (deployment), CI/CD & Agile (ECE 321 coursework)
AI/ML: Machine Learning, Reinforcement Learning, Graph Neural Networks, LLM-based Chatbots and Automation, RAG, Agentic AI
AI Dev Tools: Claude Code, Cursor, Antigravity
Systems/Hardware: Linux/Unix, Windows, Embedded MCU (STM32, FreeRTOS, UART), PCB Design
MS Office: Excel, Word, PowerPoint

Leadership & Involvement

Vice President Finance, Computer Engineering Club (CompE Club), University of Alberta — May 2026 – Present
Student-run club representing Computer Engineering students; runs hackathons (HackED), workshops, and career events
– Manage financial operations and resources for computer engineering students and technical initiatives

Electrical Crew Member, EcoCar Team, University of Alberta — May 2026 – Present
Student team that designs and builds hydrogen fuel cell powered cars for the Shell Eco-marathon competition
– Work with embedded systems, STM32, and PCB design as part of an interdisciplinary engineering team

Junior Leader, Student Engagement Leadership Program, University of Alberta — May 2026 – Present
Faculty program where upper-year engineering students support wellness and university-transition initiatives
– Support student engagement, networking, and orientation initiatives across the Faculty of Engineering

Student Tutor, Students' Union, University of Alberta — Sep 2025 – Present
– Facilitated 20+ technical tutoring sessions for first- and second-year engineering students in circuit analysis, calculus, and data structures, adapting explanations to different learning styles

Director of Auditing & Finance, Engineering Students' Society (ESS), University of Alberta — Jan 2026 – Apr 2026
Non-profit society of undergraduate engineering students that governs engineering clubs and provides services, events, and advocacy
– Oversaw financial operations and auditing for engineering student initiatives

Funding Coordinator, Engineering Students' Society (ESS), University of Alberta — Jan 2026 – Apr 2026
– Coordinated funding allocation for engineering student initiatives

Finance Coordinator, Engineering Students' Society (ESS), University of Alberta — Oct 2025 – Dec 2025
– Managed financial operations, reimbursements, bookkeeping, and funding allocation for engineering student initiatives

Junior Executive (External), CompE Club, University of Alberta — Jan 2026 – Apr 2026
– Supported external relations and outreach for the club

Organizing Committee Member & Project Judge, CompE Club, University of Alberta — Jan 2026 – Feb 2026
– HackED 2026: hybrid hackathon with 500+ students from schools across Canada

Certificates

AI For Everyone – DeepLearning.AI, Mar 2026
AI Agents and Agentic AI in Python: Powered by Generative AI – Vanderbilt University, Feb 2026
Retrieval Augmented Generation (RAG) – DeepLearning.AI, Jan 2026
OCI AI Foundations Associate – Oracle, Oct 2025 (valid through Oct 2027)
Git Version Control for Beginners – CodeSignal, Sep 2025
Working Safely – University of Alberta, 2023–2025
Lab & Chemical Safety – University of Alberta, 2023–2025
WHMIS – University of Alberta, 2023–2025

Awards & Scholarships

1st Place, WiCyS x AWS Security Jam (team of 3, live AWS environments), University of Alberta, Oct 2026
2nd Place, Programming, University of Alberta Engineering Competition (UAEC), Nov 2025
Dean's Research Awards (DRA), Winter 2025
University of Alberta International Admission Scholarship, 2023
University of Alberta Regional Excellence Scholarship, 2023
Faculty of Engineering Iron Standard Entrance Scholarship, 2023

Additional Information

Languages: English, Hindi, Konkani, Kannada, French (elementary)
Interests: Swimming, Cooking, Badminton
License: Class 5 Full License (Alberta)