# Rahul Cheruku | BEng

+1 (613) 299-2554 | rahulcheruku10d7@gmail.com | LinkedIn

***Software | Hardware | Embedded***

Systems and Computer Engineering graduate skilled in embedded systems, FPGA design, full-stack development, and cloud technologies. Delivered projects improving efficiency, speed, and accuracy. Collaborative problem-solver with proven technical and compliance expertise, ready to drive innovative engineering solutions.

## RELEVANT SKILLS

**Programming & Software Development:** C, C++, Python, Java, JavaScript, PHP, SQL, Verilog, VHDL; Full-stack web (HTML/CSS/React, APIs, PHP/SQL); Embedded systems, firmware, RTOS, PID control, I2C, serial comms, Docker; Agile, Git, unit testing, documentation.

**Embedded & Hardware:** Arduino, Raspberry Pi, Zynq-7000 FPGA, FS-i6X; Digital design (Verilog/VHDL, high-speed logic, processor architecture); Sensor integration, motor control, signal multiplexing; IoT security, remote monitoring.

**Cloud & Databases:** SQL optimization, data storage efficiency; Apache, XAMPP, server optimization, caching mechanisms.

**Engineering & System Design:** Circuit simulation, power distribution, infrastructure planning; Standards compliance, risk assessment, system reliability; Cross-functional collaboration, project management.

**Testing & Optimization:** Hardware/software validation, debugging, performance tuning, ATE data analysis, process yield improvement.

## WORK EXPERIENCE

**Infrastructure Design Technician – Planview Utility Services Limited** *May 2024 – May 2025*

The organization provides engineering and subsurface utility mapping services for utility and municipal infrastructure projects across Canada.

- Reduced design revision time by 15% by conducting detailed non-linear pole line calculations using SpidaCalc and AutoCAD, delivering accurate design solutions that ensured compliance with project standards and regulatory requirements.
- Improved project approval rates by 20% and reducing delays by collaborating with clients, contractors, and third-party vendors to review permit applications, align on design standards, and proactively address project challenges.
- Led professional development initiatives within the design team, leading to a 25% increase in team productivity by identifying bottlenecks and implementing improvements that optimized workflow.

**Technical Standards Engineering – Hydro Ottawa Limited** *January 2023 – December 2023*

The organization distributes electricity to over 335,000 homes and businesses in the Ottawa region, focusing on reliable and efficient energy delivery.

- Reduced document retrieval time by 30% and manual processing by 20% by working with engineers to streamline document management and metadata organization using AODocs (Google Cloud Platform) and Excel/Sheets macros.
- Collaborated with cross-functional teams to integrate and verify complex systems, analyzing results to ensure compliance with industry standards and to ensure accurate report preparation.
- Improved asset tracking accuracy by 15% and managed third-party asset assessment requests and processed As-Built drawings to locate assets. Supported the development of comprehensive risk assessments and mitigation strategies in the Distribution Engineering Sector.

## APPLIED PROJECTS

**Intelligent Autonomous Vehicle Control System** `` *September 2024 – April 2025*

Safety and Reliability Team

- Developed an RC override system integrating STM32, Arduino, and Raspberry Pi platforms, employing I2C, CANBus, and SPI communication protocols and PWM adjustments to improve motor control, increasing vehicle responsiveness by 75%.
- Designed and implemented embedded control software in C/C++ using VSCode and Linux terminal, integrated with ROS for system orchestration and diagnostics, achieving a 60% increase in fail-safe manual control reliability.
- Conducted hardware debugging with oscilloscopes and leveraged signal multiplexing techniques, enhancing communication reliability and data throughput by 60%, reducing latency and improving system stability.

**Optimized Full-Stack Web Platform with Caching** *January 2024 – December 2024*

Programmer

- Built a secure, dynamic full-stack web application using HTML, CSS, JavaScript, React, PHP, and SQL on an Apache/XAMPP server platform, implementing user authentication and efficient data storage.
- Applied advanced caching techniques and server-side optimizations, reducing page load times by 25% and significantly enhancing user experience in high-traffic scenarios.
- Employed Agile development practices and Git version control to enable iterative collaboration and robust testing, ensuring rapid feature delivery and high code quality.

**High-Speed FPGA Cache Memory Architecture** *September 2024 – December 2024*

Programmer

- Designed and deployed a custom cache memory system on a Zynq-7000 FPGA using Verilog, VHDL, and C, optimizing memory hierarchy to improve data retrieval speed by 50%.
- Utilized Vivado tooling for synthesis, simulation, and hardware debugging while implementing advanced caching strategies including Least Recently Used (LRU) and direct-mapped caching to enhance processing throughput.
- Profiled system performance metrics to identify bottlenecks and applied hardware-level optimizations, leading to a 40% improvement in data flow efficiency during high-speed processing tasks.

**Embedded Autonomous Snow Plough Control** *September 2024 - December 2024*

Project Lead

- Led hardware-software co-design of an autonomous snow plough using Embedded C, integrating sensors, motor drivers, and RTOS for real-time obstacle detection and task scheduling.
- Applied serial communication protocols for real-time data transfer and constructed an intelligent path planning system using dataset analysis for predictive navigation.
- Simulated electrical components and circuit behavior extensively using LTSpice, while coordinating hardware integration and testing to ensure high system reliability in operational simulations.

**IoT Remote Monitoring Project** *January 2024 - April 2024*

Project Lead

- Developed an IoT remote monitoring system on Arduino and Raspberry Pi, using I2C and serial communication for sensor data acquisition, and implemented data visualization dashboards with PHP, SQL, React, and API integrations.
- Created a Kotlin-based mobile app using OpenCV for real-time image processing and integrated with the backend APIs, allowing remote monitoring and control.
- Implemented backend data processing in Python using VSCode for development, streamlining data analytics and enhancing alerting mechanisms, resulting in a 35% improvement in remote response times and 40% increase in system uptime through power management and signal multiplexing.

## EDUCATION

**Masters in Artificial Intelligence (Online)**

University of Texas at Austin *January 2026*

**Bachelor of Engineering | Systems and Computer Engineering**

Carleton University *Graduated: May 2025*