Rahul Cheruku | BEng | MS

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Software | Embedded | Cloud | AI

Systems and Computer Engineering graduate with hands-on experience in embedded systems, FPGA design, full-stack development, and cloud fundamentals. Fast learner and AI enthusiast who builds practical projects focused on improving efficiency, performance, and accuracy. Collaborative problem-solver eager to grow and contribute to innovative engineering teams.

EDUCATION

Masters | Artificial Intelligence (Online & Asynchronous)
University of Texas at Austin — *January 2026 - Present*

Bachelor of Engineering | Systems and Computer Engineering
Carleton University - *Dean's List (2023–2025)* — *Graduated: June 2025*

RELEVANT SKILLS

Core Languages & Tools: Python, C/C++, Java, JavaScript, SQL, HTML/CSS, Git, Linux, REST APIs, TCP/UDP fundamentals**.**
Embedded & Hardware: STM32, Arduino, Raspberry Pi, STM32 HAL, UART/SPI/I2C, GPIO/PWM, Real-time control, Hardware-software integration.
FPGA & Digital Design: Verilog, VHDL, Xilinx Zynq-7000, Vivado, Processor design fundamentals, Cache memory design.
AI, CV & Data: OpenCV, Facial recognition, Pre-trained model integration, AI-powered web apps, Basic data processing.
Cloud & DevOps: AWS (EC2, S3), Docker, Deployment pipelines, Cloud app hosting, Agile workflows.

APPLIED PROJECTS

Free AI Meal Planner | Python, Streamlit, Ollama, LLaMA 3.2

- Ingredient-driven recipe generation pipeline using structured prompts, enforcing deterministic inclusion of all user-specified inputs in model output.
- Local LLM inference integration via Ollama with timeout, connectivity, and failure handling to ensure reliable end-to-end execution.
- Interactive Streamlit UI rendering fully formatted recipes (title, prep/cook time, ingredients, steps) with zero API dependency and on-device data privacy.

Facial Recognition Attendance System | Python, OpenCV

- Real-time face detection and recognition pipeline using facial embeddings, live video capture, and pre-enrolled identity dataset.
- Automated attendance logging with timestamped entries written to date-specific CSV files for structured analysis.
- Recognition accuracy improvements through preprocessing, confidence-threshold tuning, and duplicate-entry prevention under varying lighting and angles.

Autonomous Vehicle Control System | C/C++, STM32, Arduino, Raspberry Pi, ROS

- RC manual override system integrating STM32, Arduino, and Raspberry Pi via I2C, CAN, SPI, and PWM, improving vehicle responsiveness by 75%.
- Embedded control software development in C/C++ with ROS-based orchestration and diagnostics, increasing fail-safe manual control reliability by 60%.
- Hardware-level debugging and signal multiplexing to improve communication reliability and data throughput by 60%, reducing control latency.

Embedded Autonomous Snow Plough | Embedded C, RTOS, Sensors

- Hardware-software co-design of an autonomous snow plough integrating sensors, motor drivers, and RTOS-based task scheduling for real-time obstacle detection.

- Serial communication-based data exchange and dataset-driven path planning logic for predictive navigation behavior.
- Electrical and system-level simulation using LTSpice to validate circuit behavior and improve integration reliability.

Optimized Full-Stack Web Platform | HTML, CSS, JavaScript, PHP, SQL, Apache

- Secure dynamic web application with user authentication, server-side logic, and relational database integration.
- Server-side caching and performance optimizations reducing page load times by 25% under simulated high-traffic conditions.
- Agile-based development workflow with Git version control enabling iterative feature delivery and maintainable codebase.

IoT Remote Monitoring System | Arduino, Raspberry Pi, Python, Firebase, SQL

- IoT-based remote monitoring system using Arduino and Raspberry Pi with I2C and serial communication for real-time sensor data acquisition.
- Backend services and data visualization dashboards built with Python, Firebase, and SQL, enabling remote monitoring, control, and alerting.
- System-level optimizations including power management and signal multiplexing, improving remote response times by 35% and system uptime by 40%.

WORK EXPERIENCE

Infrastructure Design Technician | Planview Utility Services

May 2024 - May 2025

- Engineering design and simulation for city utility expansion projects using AutoCAD and SpidaCalc, validating pole-line and grid calculations prior to field installation, reducing design revisions by 35%.
- Cross-team coordination with municipal stakeholders and field crews to align designs with standards, improving project approval rates by 40% and execution efficiency.

Technical Standards Engineering | Hydro Ottawa

Jan 2023 – Dec 2023

- Engineering standards validation and system compliance support for electrical distribution infrastructure, ensuring accurate documentation and readiness for field deployment.
- Data workflow optimization using AODocs (Google Cloud Platform) and spreadsheet automation, reducing document retrieval time by 60% and improving asset tracking accuracy by 45%.