

Rhythm Panchal

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EDUCATION

University of Waterloo
Bachelor of Applied Science in Mechatronics Engineering

Waterloo, ON
Sep. 2026 – Apr. 2031

EXPERIENCE

Magic Hour (YC W24)

Apr. 2026 – Present

Software Engineering Intern

Remote

- Built and shipped developer integrations for Magic Hour's generative media platform across **Vercel AI SDK, Replit, Zapier, LangChain, LlamaIndex, ComfyUI, and MCP**, exposing image, video, and audio generation workflows through developer-native interfaces
- Developed production **Python and TypeScript** services and SDK tooling around asynchronous media-generation APIs, implementing job submission, polling, webhook handling, parameter validation, error recovery, and standardized model interfaces
- Developed internal scripts and engineering tools to automate **model testing, API validation, dataset preparation, and repetitive developer workflows**, reducing manual work across product and engineering experiments

University of Toronto · T-CAIREM

Nov. 2025 – Feb. 2026

Surgical Robotics Research Intern

Toronto, ON · Hybrid

- Supported development and validation of a **surgical robotics prototype**, integrating actuators, sensors, mechanical assemblies, embedded control components, and instrumented test fixtures into repeatable experimental setups
- Built **Python test automation and data-analysis scripts** to process robot telemetry and sensor measurements, reducing manual analysis and enabling faster comparison of actuator performance, positioning accuracy, and repeatability
- Created **Power BI dashboards** and Excel reporting workflows, using **Power Query** to clean and combine experimental datasets and summarize test results, recurring failure modes, and design changes across prototype iterations

Ontario Tech University

May 2025 – Aug. 2025

Engineering & Robotics Instructor

Oshawa, ON · On-site

- Designed and delivered a hands-on **embedded systems and robotics curriculum** with structured lesson plans, lab instructions, and troubleshooting guides covering autonomous navigation, sensor feedback, and motor control
- Managed multiple concurrent student engineering projects, tracking progress, resolving hardware and software blockers, and prioritizing issues to keep teams moving through **build-test-debug** cycles

McMaster University · SynBio

Jun. 2024 – Aug. 2024

Hardware & Embedded Systems Intern

Hamilton, ON · On-site

- Developed hardware for an experimental **biosensing platform**, integrating microcontrollers, sensors, analog/digital electronics, data acquisition, and mechanical components into iterative bench prototypes
- Built **Python scripts for sensor-data collection, cleaning, analysis, and visualization**, enabling faster comparison of test conditions and helping identify noise, drift, and repeatability issues during hardware validation
- Maintained technical tasks and experiment status in **Jira** and created **Confluence** documentation for hardware assemblies, calibration procedures, and troubleshooting, improving knowledge transfer across hardware, dry-lab, and wet-lab contributors

PROJECTS

RedVision | Raspberry Pi, Python, OpenCV, TensorFlow

Jan. 2025 – May 2025

- Built an end-to-end Raspberry Pi medical technology prototype for non-invasive anemia screening, integrating image acquisition, preprocessing, machine-learning inference, and result visualization
- Developed structured data-processing and validation workflows across a **4,000+ image dataset**; received a \$1,000 Rideau Hall Foundation innovation award and recognition through the Ingenious+ program

Autonomous Battle Bot | Python, PID Control, IR Sensors, Ultrasonic Sensors

May 2025 – Aug. 2025

- Built and iteratively tested an autonomous differential-drive robot using IR reflectance and ultrasonic sensing for navigation, line tracking, boundary detection, and obstacle response
- Logged results across 20+ experimental runs and systematically tuned **PID parameters** based on observed tracking error, oscillation, and response, using test data to guide each control-system revision

DIY Arduino Lightsaber | C/C++, Arduino, MPU6050, WS2812B, Fusion 360

Jun. 2025 – Aug. 2025

- Wrote C++ firmware using **I2C** sensor data and finite-state control logic to coordinate motion detection, lighting, and audio behavior while debugging hardware, firmware, and power-delivery issues

TECHNICAL SKILLS

Languages: Python, C/C++, TypeScript, JavaScript, SQL, Bash

Software & APIs: REST APIs, FastAPI, Node.js, Git, GitHub, Docker, Linux, Vercel, Webhooks, npm, PyPI, CI/CD

AI & Media: PyTorch, TensorFlow, OpenCV, FFmpeg, Image/Video Generation, Speech/Voice, Multimodal Model Evaluation

Developer Ecosystems: Vercel AI SDK, MCP, LangChain, LlamaIndex, Zapier, Replit, ComfyUI

Data & Engineering Operations: Pandas, NumPy, Excel, Power Query, Power BI, Jira, Confluence, Technical Documentation

Hardware & Mechatronics: Arduino, Raspberry Pi, Embedded Systems, Sensors, PID Control, I2C/SPI/UART, PWM, Fusion 360