

# Paarth Sharma

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## EDUCATION

### University of Waterloo

*Bachelor of Applied Science in Computer Engineering*

Waterloo, ON

Sep. 2025 – Apr. 2030

## CERTIFICATIONS

### IBM Machine Learning Professional Certificate (from Coursera)

*Industry-oriented program covering core ML algorithms, data analysis, and a capstone project*

Expected Dec. 2025

*In Progress*

## EXPERIENCE

### Software Development Intern

2025 – Present

*Sample Junction*

*Canada*

- Developed and maintained automated test suites using Java, Selenium, and the Page Object Model.
- Executed functional and regression testing, identifying defects and validating fixes across releases.
- Collaborated with developers to improve test coverage and overall software reliability.

### Flight Autonomy Developer

Sep. 2025 – Present

*Waterloo Aerial Robotics Group — Autonomy Sub-team*

*University of Waterloo*

- Implemented MAVLink heartbeat, telemetry, and command workers for simulated autonomy control (telemetry system).
- Parsed ATTITUDE and POSITION messages to generate yaw and altitude corrections toward target points.
- Developed vision-based marker detection achieving **90%+ accuracy** in controlled tests.

## PROJECTS

### Autonomous Vision-Guided Robot | *ESP32, OpenCV, YOLOv8, MiDaS, Python, Embedded C*

Nov. 2025

- Architected an end-to-end autonomous robotics system integrating computer vision, depth estimation, real-time inference, and microcontroller-level actuation.
- Engineered a perception pipeline combining YOLOv8 object detection with MiDaS depth estimation for spatial understanding.
- Developed a deterministic JSON-based communication layer ensuring low-latency, reliable navigation commands.
- Implemented modular PID-style control loops enabling precise, repeatable movement and obstacle handling.

### Machine Learning Pipeline | *Python, Pandas, Scikit-Learn, Gradient Boosting, Docker*

Nov. 2025

- Designed and implemented a complete ML pipeline including preprocessing, feature engineering, and model evaluation.
- Built a Gradient Boosting regression system with automated scaling, encoding, and cross-validated training.
- Performed EDA on 20+ audio features to identify influential predictors and optimize transformations.
- Containerized workflows using Docker for reproducible experimentation and deployment.

### Vector Search LLM Retrieval System | *React, TypeScript, Node.js, LangChain, Qdrant, Docker*

Jul. 2025

- Engineered a semantic search and document Q&A system using embeddings and vector databases.
- Architected a modular platform integrating React UI, Node backend, and Qdrant under Docker Compose.
- Optimized chunking and embedding strategies to improve retrieval relevance and reduce latency.
- Implemented fault-tolerant REST APIs and asynchronous embedding workflows.

## TECHNICAL SKILLS

**Languages:** Python, Java, C, C++, C#, JavaScript, TypeScript, HTML/CSS

**Machine Learning:** Scikit-Learn, Pandas, NumPy, Matplotlib, Gradient Boosting, EDA

**Computer Vision:** OpenCV, YOLOv8, MiDaS Depth, Image Processing

**Frameworks:** React, Node.js, Express.js, MERN Stack, LangChain

**Testing:** Selenium, Page Object Model (POM), Functional Testing, Regression Testing

**Developer Tools:** Git, Docker, Docker Compose, QdrantDB, VS Code, Arduino IDE, REST APIs

**Embedded Systems:** ESP32, UART Communication, Sensor Integration, Real-Time Control Loops

**Databases:** Qdrant (Vector DB), MongoDB