

JOEY QUINLAN

780-264-9359 | joeyquinlan02@gmail.com | [linkedin](#) | [github](#) | [website](#)

EDUCATION

University of Alberta

Honors Computing Science, BSc

Relevant Coursework: OS, Algorithms & Data Structures, DB Management, Machine Learning, Robotics, Compilers

Sept. 2020 – Dec. 2024

Cumulative GPA: 3.95/4.0

WORK EXPERIENCE

Software Developer

Oct. 2024 – Present

Aro Robotic Systems | C++, Python

Edmonton, AB

- Architected a modular, plugin-based autonomy framework using behavior trees, enabling scalable task composition and reducing coupling between high-level behaviors and low-level robot capabilities
- Developed an extensible, spatially-aware environment management system to model facility constraints and enforce robot operating boundaries at runtime
- Designed and implemented a thin API wrapper over the robot backend, enabling stable, well-defined integrations with server-side applications while isolating backend complexity
- Established a multi-remote Git workflow to reliably version and synchronize multiple repositories between GitHub and internet-disconnected robots, reducing deployment friction and configuration errors
- Led codebase stabilization and cleanup efforts, including developer documentation, linting standards, and CI/CD pipelines, improving maintainability and enforcing non-functional quality requirements

Software Team Lead | ROS2, C++, Python, Docker | [code](#)

Aug. 2023 – Dec. 2024

University of Alberta Formula Racing

Edmonton, AB

- Lead the development of the UofA Formula Racing Club's first autonomous driving subsystem, mentoring and onboarding new members while coordinating across engineering disciplines to advance the project
- Built a stereo vision-based perception pipeline using the Stereolabs ZED2i camera and ROS2 wrapper for cone detection and localization
- Containerized the software stack with Docker to allow for consistent development across operating systems

Undergraduate Research Assistant | Python, OpenCV, NumPy, Pandas | [code](#) | [paper](#)

May 2023 – Aug. 2023

University of Alberta

Edmonton, AB

- Received the \$8000 NSERC USRA to build a video processing algorithm capable of detecting and tracking 15 classes of vehicles, reducing manual data extraction time by 75%
- Implemented a closed-loop active learning pipeline utilizing Roboflow, alleviating an unbalanced data set and cutting off 80% of manual labeling time
- Delivered in-depth presentations on cutting-edge research to diverse audiences, including industry clients and academic peers, culminating in a presentation at IEEE ISM 2023

Software Engineer Intern | Python, OpenCV, Django

May 2022 – Aug. 2022

Promise Robotics

Edmonton, AB

- Engineered sequencing actions for a robotic cell by leveraging Django models and unit tests, providing building blocks for more complex robot activity
- Designed a multi-threaded client-server computer vision system using Python and the StereoLabs ZED SDK, resulting in a 3x increase in acquired image data

PROJECTS

Autonomous Foosball, with a Twist | Python, OpenCV, NumPy | [code](#)

- Engineered a 1v1 autonomous foosball/pong system for a final course project
- Calibrated a fixed-camera system using OpenCV calibration and point projection functionality, along with empirical testing, to reduce localization error to ≈ 0.2 cm in both x and y directions
- Built a multi-threaded image processing loop with an eye for speed, capable of detecting objects and building trajectory estimates while maintaining 30 fps for real-time operation

Gasziprea | C++, ANTLR

- Designed and implemented a context-free grammar using ANTLRv4 for the [Gasziprea](#) programming language
- Constructed a heterogeneous abstract syntax tree (AST) to facilitate downstream semantic analysis, including arithmetic constant folding, implicit type promotion, and compile-time error checking
- Created a symbol table and a custom def-ref AST pass that ensured variable shadowing, nested type definitions, and subroutine prototypes all aligned with the language's specifications

TECHNICAL SKILLS

Languages: Python, C/C++, JavaScript, HTML/CSS, SQL

Technologies: Git, ROS2, CMake, Docker, GoogleTest, pytest, OpenCV, NumPy, Pandas, SQLite, Django