James P. Walsh

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EDUCATION

University of Massachusetts Lowell – Lowell, MA **May 2025**

Bachelor of Science in Computer Science, Minor in Mathematics; GPA: 3.7

TECHNICAL SKILLS

Programming Languages: C++, Python, C, MATLAB, C#

Operating Systems: Linux, Ubuntu, Robot Operating Systems (ROS), Windows, Chrome

Software: Jira, Jama, Slack, Git, draw.io, Unity, Visual Studios, MS Office, Arduino IDE, Saleae SDK

Hardware: Arduino microcontroller, Saleae Logic Analyzer, oscilloscope, breadboard, soldering equipment

Methodologies: Agile, Scrum, UML

TECHNICAL PROJECTS

Senior Capstone Project: Self-Driving Car Decision-Making AI model **Spring 2025**

- Designed and developed an AI-driven decision-making model for autonomous vehicles using a Naïve Baye's classifier and a custom neural network.
- Trained the model using Kaggle Self-Driving Cars dataset, leveraging real-world sensors and image data.
- Evaluated models using accuracy, precision, recall, and F1-score. Visualized overfitting through loss/accuracy curves.

FlashCars – Educational Game **Fall 2024**

- Lead group project of four peers with the objective of creating an educational game for elementary students. A player's car avatar moves along a track by answering multiple questions for a subject of their choice. After completing the study set, they are given their time so they can track their progress. This game provides students with a fun alternative way to learn.
- Co-authored a comprehensive SRS document to define functional, non-functional, and technical requirements.
- Programmed in C# and developed using Unity.

DuckieBot **Spring 2023**

- Mini Robot programmed in Python using Robot Operating System (ROS).
- Dukiebot is a 3-wheel robot created by DuckieTown. The robot was programmed to do several different maneuvers using image processing. Examples include driving around a track, staying right of yellow dotted lines and left of white solid lines, mimicking a car on the road. Also, stopping at stop signs using a programmed PID Controller.

RELEVANT WORK EXPERIENCE

Firmware Engineer Co-op – Rockwell Automation – Chelmsford, MA **January 2024 – August 2024**

- Worked alongside firmware engineering team on long term project development and testing.
- Designed and developed a low-level analyzer for debugging serial communications between two microcontrollers on the system. Analyzer provides a detailed decomposition of the data from captured messages.
- Performed testing/verification of anomalies found in firmware of product by simulated real world applications using an Arduino microcontroller.

OTHER EXPERIENCE

Academic Tutor and Grader – University of Massachusetts Lowell – Lowell, MA **February 2023 – May 2025**

- Tutor for programming in C/C++ and using Linux OS.
- Lead one-on-one and group tutoring sessions to revisit topics from class and give students alternative ways to think and understand the course material.
- Grade assignments and exams for programming courses. Provide constructive feedback to students.