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#, Java

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, circuit boards, 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 first assembled, then 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**

- Collaborated closely with firmware engineering team, focusing on long term project development and testing.
- Performed hands-on hardware testing/verification of anomalies found in firmware of product. Used testing equipment such as circuit boards, digital oscilloscopes, logic analyzers, and soldering equipment on microcontrollers to simulate real world applications of the product. Recorded testing outcomes and observations.
- Designed and developed a custom low-level analyzer for debugging serial communications between two microcontrollers on the system. Analyzer provides a detailed decomposition of the data from captured messages.

OTHER EXPERIENCE

Academic Tutor – 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.