Amjad Yaghi

Portfolio & Blog | amjadclnyaghi@gmail.com | LinkedIn | GitHub

Education

Bachelor of Applied Science, Engineering Physics (Co-Op) Sep. 2021 – Apr. 2026
University of British Columbia *Vancouver, BC*

- Relevant Coursework: Data Structures & Algorithms, Applied Linear Algebra, Signals & Systems, Machine Learning
- Including a four-month exchange at Nanyang Technological University, Singapore

Experience

Rocket Payload Designer Sep. 2022 – Aug. 2023
UBC Rocket *Vancouver, BC*

- Designed and launched an experiment to test tPA effects on blood clots in microgravity using linear actuators and solenoid valves, which was housed in a 3U+ CubeSat launched to **30,000ft**
- Developed a **Processing GUI** to control actuators and monitor limit switches via Arduino, enhancing data collection

Project Coordinator Jan. 2023 – Apr. 2023
EllisDon Corporation *Vancouver, BC*

- Automated departmental processes with **Google Sheets scripts**, improving document accessibility and efficiency
- Presented innovative computer science solutions to EllisDon's **international** VDC team, earning accolades
- Managed **100+ RFIs and submittals**, ensuring clear communication among project stakeholders

Projects

Projection-Mapped Interactive String | *Processing, OpenCV* Dec. 2024 – Present

- Created an interactive guitar string projection using **Processing**, allowing users to "pluck" the string by casting shadows with a finger
- Integrated a custom chord-selection system inspired by music theory, enhancing the interactive experience
- Utilized **OpenCV** for real-time contour detection to trigger string vibrations and display visual effects

Multitasking Simulation Agent | *Python, Gazebo, OpenCV, TensorFlow* Sep. 2024 – Dec. 2024

- Developed a **Gazebo agent** for terrain navigation and text recognition, ensuring safe multitasking through state-machine control
- Implemented PID control for precise driving on track marks and tracking moving targets in off-road navigation
- Utilized **OpenCV** for pedestrian detection and image preprocessing, optimizing input to a **Convolutional Neural Network** in **TensorFlow** to achieve $>$90% classification accuracy on blurry and rotated symbols

Autonomous Mario Kart Robot | *Arduino, STM32, Bluepill* May 2023 – Aug. 2023

- Spearheaded the software development of a unique autonomous robot for a head-to-head competition, being one of only two teams out of 17 to successfully use the **zipline mechanism**
- Designed and implemented a **convolution algorithm** using **Arduino** to enable precise infrared beacon tracking
- Engineered an autonomous coin-collection claw, triggered by sonar sensor feedback, which slid down a steel pipe to collect magnetically-attached coins in the competition
- Integrated **buck converters** to stabilize power across four motors, enhancing the robot's overall performance

Closed-Loop Motor Speed and Boost Controller | *Digital Logic, AD2, WaveForms* Sep. 2022 – Dec. 2022

- Designed and implemented a closed-loop motor speed controller using digital logic counters, clock pulse generators, and digital-to-analog converters, troubleshooting with oscilloscopes and multimeters
- Built a DC-to-DC boost circuit increasing voltage by over **250%**, and applied it to enhance the motor

Skills & Interests

Technical Skills: Git, MATLAB, Arduino, Circuitry, Google Apps Script, OpenCV, TensorFlow, State Machines
Programming: Java, JavaScript, Python, C/C++, Bash
Languages: English (Fluent), French (Fluent - 12 years of immersion), Arabic (Proficient), Chinese (Beginner)
Interests: Projection Mapping, Interactive Environments, Traveling, Music Production, Video Editing, Gymnastics