Arnold W Muralt

Worcester, MA 01609 awmuralt@wpi.edu (732) 788-9312

OBJECTIVE: Highly motivated Robotics Engineer seeking full-time employment in automation/mechatronics

EDUCATION

Masters of Science in Robotics Engineering at Worcester Polytechnic Institute (WPI, Worcester MA) - 2023
Cumulative GPA: 3.47
Bachelor of Science in Robotics Engineering at Worcester Polytechnic Institute (WPI, Worcester MA) – 2021
Minor: Mechanical Engineering

SKILLS

Programming Languages: Java, C, C++, **C#**, Racket, **Python**, Verilog, MATLAB, Ladder Logic, Rapid
Software: AutoCAD 2D/3D, Solidworks (Including design for 3d printing and laser cutting) Solidworks CWSA Certificate C-3WKMSXLCZH, Office suite (Word, PowerPoint, Excel, and Outlook), GitHub, Logisim, ROS, Visual Studio Code, Do-More Direct, Robot Studio
Equipment: Soldering/ Prototyping, Oscilloscopes, Projectionist in Training – level six (Digital projection, 16mm, 35mm, Sound, running the booth), trained in using both lighting and sound console operations, Lift trained according to ANSI/OSHA standards with scissor lifts, boom lifts, and mast lifts. 3D printers, Laser Cutters, CNC machines, **PLC**, Industrial Robots, **Robotic Arms**, Light Curtains

WORK EXPERIENCE:

Industrial Robotics Grader & Teaching Assistant, WPI, Fall 2021 – Spring 2023
Worked with multiple professors to maintain, develop and teach course materials, demos, labs and experiments.
Taught Students to use, program, and troubleshoot ABB robots and PLCs.

Alert Innovation: Test Engineering, June – December 2020
Worked in the test & prototyping engineering department under NDA.

RESEARCH EXPERIENCE:

Soft Robotics Lab (SRL) Researcher, WPI, Spring 2021-Present
Worked as a member of the SRL to research pneumatic actuators and their applications.

FORW-RD NRT Trainee, WPI, Fall 2022-Present
Worked with other members of the FORW-RD program at WPI to develop research skills for advancing the future of robotics in the workplace.

PROJECTS:

Spider Inspired Pneumatic Actuator, WPI, Fall 21-Present
- Worked to vastly improve mold design and manufacturing process of pneumatic linear actuators.
- Designed Modular laser-cut exoskeleton to program actuator deformation
- Conceived and Designed 3 Use cases for the Actuator: Gripper, 2 DOF manipulator, and Jellyfish platform
- Submitted to ISER Robotics research Conference

3D Finray Gripper, WPI, Fall 21' – Summer 22'
- Designed Weight Capacity Experiment comparing two radial gripper designs lifting spherical vs cylindrical and Rectangular solids.
- Contributed figures and text to a published paper in Soft Robotics Journal

Soft Robotics, WPI, **Final Project: MantaRay Robot**
- Collaborated on the design of soft ring oscillator
- Investigated Delay caused by varying tube diameter
- Collaborated on the presentation of findings to class.

Robot Controls, WPI, **Final Project: Controllers for Quadcopters**
- Simulated Crazyflie ROS 1 based Quadcopter in Gazebo
- Collaborated on the Design of Sliding mode Controller for Altitude and Attitude of Quadcopter
- Generated Quintic Polynomial Trajectories for the Quadcopter to follow

Metamorphic Manufacturing MQP, WPI, Sept 2020 - May 2021
- Collaborated on the Design of Robot End Effector capable of deforming and shaping plasticine clay
- Programmed and configured Industrial PLC to control End Effector as required by calls by controller

Industrial Robotics, WPI, **Final Project: Robot Scrabble** Oct-Dec 2020
- Wrote RAPID functions to decipher letters placed in front of a virtual camera and place on Scrabble Board
- Debugged Simulation environment to ensure proper performance
- Wrote Functions to calculate Scrabble letter and word score using RAPID

Software Engineering, WPI, **Final Project: AWS Collaborative Decision maker**
- Collaborated to create a web-server front and back end utilizing AWS and SQL
- Designed User Experience tree for front end interactions with users
- Used SQL database techniques to maintain large quantities of users, user votes, and decision states

ISP- Small-Kat - Robotic walking on hardware, WPI, Oct-Dec 2019
- Manufactured, assembled, and Tested open-sourced Small cat-like robot
- Programmed own Dynamic Walking gait

Unified Robotics IV, WPI, **Final Project: Navigation Challenge** Oct-Dec 2019

- Used ROS 1 to perform a SLAM and navigation Challenge within arbitrary maze
- Collaborated with small group to Utilize TurtleBot3 Platform
- Collaborated on A* Algorithm node in Python 2.7

Unified Robotics III, WPI, **Final Project: Robot Sorting Machine** Sep-Oct 2019

- Wrote Computer Vision Code to capture and process positions of various targets utilizing Matlab
- Collaborated with team to Generate Kinematics model of 3DOF manipulator
- Calculated frame transfers and PID controllers for each of the Manipulator's joints

Unified Robotics II, WPI, **Final Project: Fire-Fighting Robot** Oct-Dec 2018

- Collaborated on the Design of a Robot to navigate a model cityscape
- Collaborated on State-machine, and navigation Algorithm utilizing C++
- Designed and constructed Electrical hardware to control Fan-Based fire Extinguisher
- Designed Mechanical System to reach "fires" in first or second story of model cityscape

Unified Robotics I, WPI, **Final Project: Model Solar Farm** Sep-Oct 2018

- Designed 4-bar system to lift model Solar Panels
- Designed Locking End effector to maintain Grasp of Solar panel
- Calculated required Gearing, and tooth Strength to Lift Panels of multiple weights onto and off of Panel Stand
- Collaborated on Drive Train Design
- Programmed State-Machine and motor control code in C++

Unified Robotics I, WPI, Sep-Oct 2018

Worked in a team of four to construct a robot to move simulated solar panels in a small course with a fully automated robot. Worked on programming, mechanical, electronics, and design of the robot and Gripper mechanism.

Introduction to Robotics, WPI, Oct-Dec 2017

Built a robot using Vex Parts and an Arduino Mega, worked in a two-person team. Won in class competition for collecting and placing balls of various sizes into goal tubes at various heights.

Global Problems Seminar: Humanitarian Engineering, WPI, Jan-May, 2018

Researched and designed a project on toilets and sanitation in Jakarta, Indonesia. Collaborated in a group of three to research, design, and presented a final project at a poster presentation with other research groups.

ADDITIONAL EXPERIENCE:

Crew, McDonald's of Leonardo, Nj – May-Aug, 2018 <- save for proving I can deal with peeps

LEADERSHIP:

Interim Finance Chairman, Beta Theta Pi Eta Tau May 2019 – October -2019

Exec position, managed Chapter funds, managed member dues billing, worked on budgeting.

Historian, Alpha Phi Omega January 2019 – April 2019

Exec position, led brothers in committees to plan a chapter anniversary, and maintain and update chapter history and bylaws.

Co-Head of Phi House December 2017- December 2018

With my Co-Head of House, organized house activities, including meeting rivalries, fellowships, and services.

Alpha Phi Omega Leadership Training

Launch – servant leadership workshop, Explore – conflict resolution and team management, Discover – working well with others

Scrum Training January 2019

(16 hour) course on SCRUM and AGILE leadership

Social Media coordinator, Beta Theta Pi Eta Tau January 2019- May 2019

Worked on several social media campaigns, taking photos, editing them, and writing posts

Volunteer Work:

Volunteered at Anime Boston 2018

Electronics Merit badge councilor WPI Merit badge university 2017, 2018, 2019.

EXTRACURRICULARS:

Lens and Lights Sep 2017 – Present

This club has helped me work on project management and working with clients, allowing me to translate client requests into great events

Brother of Alpha Phi Omega Omicron Iota Sep 2017 – May 2021

Brother of Beta Theta Pi Eta Tau Jan 2019 – May 2022

RELEVANT COURSEWORK:

Introduction to Computer aided Design ES1310 (Solidworks)
Soft Robotics RBE 530
Robot Dynamics RBE 501
Robot Controls RBE 502
Concepts of Systems Engineering SYS 501
Robot Materials RBE 595 (Special Topics)
Legged Robotics RBE 521
Ethical Impact and Communication In Robotics and AI Research WR 513