Address:
100 Institute Road, Box 1239,
Worcester, MA 01609

Arnold W Muralt

Contact info:
awmuralt@wpi.edu
(732) 788-9312

OBJECTIVE: Highly motivated Robotics Engineer with a background in mechanical engineering Seeking Full-time work starting in the summer of 2023

EDUCATION:

Masters of Science in robotics Engineering at Worcester Polytechnic Institute (WPI, Worcester MA) - expected May 2023
Cumulative GPA: 3.4

Bachelor of Science in Robotics Engineering at Worcester Polytechnic Institute (WPI, Worcester MA) – August 2021 and a minor in Mechanical Engineering: Cumulative GPA: 3.31

High School diploma from Rumson Fair Haven Regional High School - 2017

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

WORK EXPERIENCE:

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

RBE/ME 4815 Grader/TA, Fall 2021, Spring 2022, Fall 2023
Worked with professors to maintain and develop course materials, maintain course materials, demos labs and experiments.

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 on pneumatic actuator system constrained by plastic exoskeleton which shaped the deformation of the pneumatic actuator

Tower of Babel Continuum Arm, WPI, Summer 21 – Present
Worked on the design, control and construction of a lightweight pneumatic continuum arm.

3D Finray Gripper, WPI, Fall 21' – Summer 22'
Assisted in the design of experiments to compare the performance of 2D and 3D finray mechanisms in grasps. Led to a paper in Soft Robotics journal.

Metamorphic Manufacturing MQP, WPI, Sept 2020 - May 2021
Worked in a team of five, and utilized an ABB Robot Arm and a PLC to create a prototype robot blacksmithing system using plasticine clay as a metal analogue.

RBE 4815, WPI, Oct-Dec 2020
Worked in a team of three and utilized Robot Studio to program an Industrial robot to play Scrabble within the RobotStudio Simulation Environment.

ISP- Small-Kat - Robotic walking on hardware, WPI, Oct-Dec 2019
Worked to re-implement 4-legged walking on the Small Kat open source robotics platform. Code was designed to be hardware independent and made use of frame transformations and poses, using Bowler Studio.

RBE 3002, WPI, Oct-Dec 2019
Worked in a team of three, and utilized ROS to program a turtlebot3 to navigate, map and move within an arbitrary maze.

RBE 3001, WPI, Sep-Oct 2019
Worked in a team of three to program a 3 degree of freedom arm to complete tasks using computer vision, Kinematics, and frame transfers. Worked on programming in MATLAB and C++ as well as calculations for frame transfers.

RBE 2002, WPI, Oct-Dec 2018
Worked in a team of three to construct a robot capable of maneuvering through a simulated small-scale urban environment to find and extinguish a small fire modeled by a lighter. Worked on programming, electrical, mechanical and design. Designed and printed several 3D printed parts

RBE 2001, 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.

RBE 1001, 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

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 my skills as a productive and reliable worker. I have learned many skills such as film projection, which help me do something other than sit in the laboratory or in classroom all day.

Brother of Alpha Phi Omega Omicron Iota Sep 2017 – Present

As a brother and former exec member, this organization has allowed me to do a lot of community service, helping those in the Worcester community and the WPI campus. This organization has also helped me to develop myself as a person and find my support group and those who advise me on classes, help me figure out homework when I am stuck, and make the most of college.

Brother of Beta Theta Pi Eta Tau Jan 2019 – Present

As a current exec member of this organization, my time has allowed me to make connections that I thought would not come out of college, and has served to improve my ability to work with others to make things happen, especially when these things are daunting to a single person.

RELEVANT COURSEWORK:

Detailed Description of selected Relevant Coursework:

Introduction to Computer aided Design ES1310 (Solidworks)

This class led me to become much more comfortable with Solidworks and allowed me to advance my abilities in designing components and assemblies.

Unified Robotics:

RBE1001 Introduction to Robotics

In this class my team was small, when other groups had teams of three, we had only a team of two to complete the project, we ended up winning the optional competition at the end of the class for our robot, this class inspired me to improve my skills of planning and design of circuitry and ignited a spark in my understanding and drive to learn more about robotics, and to excel at college overall.

RBE2001 (Actuation), RBE2002 (Sensing)

These classes helped me to grapple with challenges relating to bug fixing and group dynamics, while my team's robots did not succeed as well as we would have hoped, I learned valuable lessons in documentation, programming in a large team, and perseverance.

RBE3001(Manipulation), RBE 3002 (Navigation)

These classes are some of the most recent robotics classes that I have taken, they served to reinforce my understanding of programming concepts by adding python and MATLAB to my repertoire. Expanded my understanding of computer vision concepts as well as mapping and pathing algorithms. These classes also helped me to get better at asking for help when I need it and being able to apply my knowledge to help others in kind.

RBE 3100 (Ethics)

This class changed how I think of robotics, it forced me to consider the potential side effects of automating labor without considering consequences from doing so. Without making these considerations it is easy to think of robotics as simply a game or competition, but it is a significant issue which must not only be considered by lawmakers and those whose job is automated, but by the engineers who design such systems.

RBE 4815 (Industrial Robotics)

In this class, I developed an understanding of industrial robotics, and their applications, as well as gaining a greater appreciation of the ways in which robots can be used in a commercial or factory setting, as well as what is required for these robots to be safe for human co-workers.

Metamorphic Manufacturing MQP

This project focused on developing my skills as a team member and as a researcher in new ideas and as a leader. In the project I worked with 4 others to build a prototype metamorphic manufacturing system, with a focus on building a bridge for future teams to continue the project and advance the prototype, until it could become a fully capable blacksmithing robot.

Static System analysis ES 2501, Stress analysis ES2502,

Object Oriented design Concepts CS2102

The Java based class forced me to think outside the box in regard to object-oriented programming and taught me search algorithms that allowed me to build on in my other classes.

Embedded computing for engineering Design ECE 2049
Embedded Coursework using the MSP430 Platform
IQP (Romania – D term 2020)
Despite unfortunate circumstances, I was able to make the best of a bad situation and completed the project exceeding the expectations of both our collaborator and our advisors. I was able to make personal connections with my collaborators and learned how to work with and manage a large team.

Graduate Classes:

Soft Robotics RBE 530
Over the course of a half semester, we wrote reports on current research, and covered some of the unique physics behind the stress and strain of flexible robots as well as the special considerations needed when designing soft robots.
Robot Dynamics RBE 501
Over the course of a semester, the topics of robot dynamics were covered, and robot dynamics was applied through matlab exercises and a final project wherein camera movement was related to robot motion to keep a moving object stationary in the camera's view

Robot Controls RBE 502
Over the course of a semester, Control engineering in the context of Robotics was covered and control algorithms were implemented within Matlab and simulated within Gazebo, making use of ROS messaging on ubuntu to the gazebo Simulator.

Robot Haptics RBE 595 (Special Topics)
Over the course of a half semester, haptic interaction and robot interface topics were covered, with a final project implementing an adapted VPS collison detection method.
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
Thesis Research RBE 599
A three part research exercise covering

Pre-College Experience:

Eagle Scout – Troop 125 Fair Haven, 2017

I spent much of my elementary and high school life in the scouting program, and have learned a lot from the experience, I have completed many hours of community service through this organization.

Order of the Arrow – Monmouth council

I became part of the order of the arrow, a scouting honor society focused on the ideals set forth in the scout oath and law and worked through service to the community to improve myself.