WILLIAM COLLETTI

Email ◇ Website ◇ Linkedin ◇ (504)344-0745

EDUCATION

Pennsylvania State University *Aug 2020 - May 2024*

Bachelor of Science, Mechanical Engineering - *Focus in Robotics*

SOFTWARE SKILLS

Autodesk Fusion/Inventor, Solidworks, C++/C, Python, OpenCV, ROS 2, ISAAC Sim, Omniverse, RTX Chat, TensorFlow, PyTorch, Linux, MATLAB, SQL, JS, HTML, CSS, JSON

MECHANICAL SKILLS

Wiring, 3D printing, Soldering, CNC, Welding, Turning, Engraving

EXPERIENCE

System Operations June 2024 - Current

Pennsylvania Power & Light *Allentown, PA*

- Control all PPL line devices, PLC devices and overall Distribution devices in the PPL Pennsylvania electrical grid to ensure a strong, coordinated system.
- Solve emergencies by coordinating the efforts of emergency services, PPL crews and our distribution energy devices to safely fix electrical hazards and keep the public safe.
- Run simulations of the E-grid in order to plan work and ensure the system stays robust in all configurations.

SphereWalker Hexapod(Grant via NASA) June 2023 - May 2024

South Dakota School of Mines & Technology *Rapid City, SD*

- Developed three walking algorithms to allow the robot to navigate laterally and linearly while still using only one motor per pair of feet.
- Created a PID control system using encoders, to track the leg positions to stabilize walking on varying terrains.
- Programmed and implemented a SphereWalker bluetooth control system for both phones and computers in order to allow for indoor and outdoor testing.
- Designed and 3D printed new prosthetic based foot model increasing shock absorption by 65% which led to improvements in stability and power consumption.
- Utilized OpenCV and ROS to make an autonomous walking model.
- Used the NASA code documentation standards to ensure coherent, organized and efficient documentation.
- Co-authored the paper "Design and Implementation of a Control System Architecture for a Hexapod Walking Machine" being published by MSR-RoManSy in May, 2024.

Research Assistant Dec 2022 - Jan 2024

Penn State Astronomy & Astrophysics Dep. *State College, PA*

- Created an on-board flight tracking system for RISE using simple sensors, wired for I2C & programmed in C++.
- Shrunk the X-ray gratings containment unit by 10% allowing the new gratings and spectrometer to be used in the Extended-Source X-ray Spectroscopy Rocket for NASA.

PROJECTS

Automated Delivery Fleet: Created three vehicles to simulate a warehouse automated supply and delivery chain, autonomously picking up and delivering packages via pre-designated routes. A variety of sensors and OpenCV were used to achieve obstacle avoidance, visual scanning and recognition. The robot used Azure to track and store data.

Pi Crawler: Created a four legged robot using a camera to navigate around a room via remote control. Java was used to create the display and interface, while C++ was used for motor control and Python was used for the logic and data processing. Trained the walking model using ROS and ISAAC Sim. in order to create significantly more trainjng data than achievable in reality.

Robotic Arms: Created multiple different types and models of robotic arms for class and personal projects that utilized a camera to sort objects via color and shape. They operated autonomously and via remote control. The latest iteration uses a twin to control precise motion across multiple work locations.

COMPETITION

- **FTC Robotics Captain** Team 3415 Livingston Lancers(FTC) team captain for 2 years, member for 4 years. Made it to 2 world championships and won the Think award at worlds. As captain learned to manage parallel projects as well as organizing meetings, events and fundraisers, on top of all the skills I learned in robotics.