Odinn Waguespack

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Education

University of Maryland — College Park, MD
B.S. Mechanical Engineering; GPA: 3.42 — *December 2024*

Scholars Honors College — College Park, MD
Science, Technology, and Society Program — *Citation Conferred May 2022*

Experience

Carnegie Robotics — Pittsburgh, PA
Mechanical Engineering Intern — *May 2025 - Sep 2025*

- Assisted in the ground-up development of a fully self contained off-road autonomy platform
- Designed and installed a LiDAR, Stereo Camera and IMU perception payload on a Polaris RZR. Modeled vehicle kinematics to inform FOV geometry
- Redesigned shift-linkage and electronic power steering mounting for conversion to drive-by wire autonomy
- Performed thermal/flow-sim analysis of active ventilation, resulting in a 35% decrease to allocated power budget

National Institute Of Standards And Technology — Gaithersburg, MD
Research Intern - Quantum Measurement Division — *Oct 2024 - April 2025*

- Developed a high precision torsion pendulum for integration with an atom interferometer testing the quantum coherence of gravity
- Implemented python scripts to automate LabView data collection, enabling FFT-based spectral analysis of high-frequency noise
- Oversaw CAD design and manufacture of precision mechanics, optics, and vacuum components
- Designed an experimental ultra-high-vacuum (UHV) test setup and managed part requisition, decreasing project lead-time by 4 months

Terrapin Works - Machine Shop — College Park, MD
Technical Supervisor — *Dec 2022 - Dec 2024*

- Managed all 5-axis CNC operations and machine maintenance
- Oversaw training of new machinists on CNC, Waterjet, and Lathe operations

Agentis Air — Derwood, MD
Mechanical Engineering Intern — *May 2023 - August 2023*

- Researched a novel ionizing filtration system. Integrated prototype with existing commercial product, increasing system efficiency by 24%
- Wrote C++ scripts for real-time monitoring of Optical Particle Counter (OPC) sensor data, reducing individual test times by 30 minutes

University of Maryland — College Park, MD
Teaching Assistant - CPSP369 Robotics Service Learning — *Aug 2022 - Dec 2022*

- Hosted robotics outreach lab for students grades 6-8
- Received highest positive course rating (5/5) from student feedback

Projects and Activities

Robotic Manipulator, Senior Capstone (1st Place) — College Park, MD
Mechanical Engineer — *Jan 2024 - May 2024*

- Worked with a team of five to design a 3-DOF robotic manipulator arm for integration with the Blue-ROV2 platform
- Developed an SLA printed actuator for manipulator control, focusing on optimizing applied force and IP68 waterproof rating
- Improved project cohesion by organizing design reviews to ensure technical specifications and deadlines were met
- Placed 1st out of 37 competing projects

Formula SAE — College Park, MD
Power Train Engineer — *Aug 2021 - Dec 2024*

- Designed a 4-1 exhaust manifold for optimization of scavenging, resulting in a 12% increase in peak torque at 10k rpm
- Designed and CNC milled custom exhaust piping mount, using prototype FDM-printed scaffolding for welding

MiniDuck V2 — College Park, MD
Personal Project — *Aug 2025 - Present*

- Built a 4.4lb, 5-DOF bipedal robot capable of semi-autonomous terrain traversal
- Redesigned electronics and compute mounting solutions for lowered COG, resulting in increased locomotion stability
- Currently training improved walking policy using MuJoCo-based physics simulation environment

Skills and Awards

Awards: Capstone Design Expo Deans Award, Deans List Fall 20-21, Spring 23-24
Programming: Python, C++, Matlab, MuJoCo, ROS2
Design/Software: Solidworks, Autodesk Fusion 360, Siemens NX, Excel, FEA, ANSYS, Creo, Overleaf/Latex
Manufacturing: Multi-axis CNC, Lathe, Manual Machining, 3D Printing (SLS, SLA, FDM, Powderbed), Laser Cutting, Waterjet