

## EDUCATION

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### B.S. Computer Science

University of Maryland - College Park • College of Computer, Mathematical, and Natural Sciences | 2021 - 2025

## CORE KNOWLEDGE AND SKILLS

Python, Rust, Java, Ocaml, C, C++, C#, Ruby, MIPS Assembly

Docker, Git, Gazebo/ROS, Unix, VirtualBox, Unity

Windows, Linux, Unix

XSS, CSRF, SQL injection, Cryptography Techniques, Secure Software Development, Software penetration testing, CTF Challenges

Machine Learning and Computer Vision: Computer Vision, Machine Learning, LLM, Roboflow, YOLOv5, OpenCV, NVIDIA CUDA

Software Techniques: Pathfinding Algorithms, SLAM (Simultaneous Localization and Mapping), geospatial data analysis, VR/Augmented Reality Development

Computer Networks, Network Security

## EXPERIENCE

### Computer Vision Software Developer

XFoundry@UMD

March 2024 – Present

- Developed real-time wildfire detection algorithms for the XPRIZE Wildfire initiative, enhancing UAV efficiency for rapid response.
- Reduced fire detection latency by 1600% using CUDA-accelerated computer vision, leveraging GPU parallelism.
- Utilized deep learning models, such as YOLOv5, for real-time object detection, improving UAV wildfire surveillance.
- Spearheaded interdisciplinary team efforts to integrate computer vision and machine learning solutions, advancing UAV navigation, mapping, and situational awareness in complex environments.

### Software Development/Aerospace Research

University of Maryland Department of Aerospace Engineering

March 2022 – August 2024

- Applied Python and C++ to analyze and resolve critical flight system issues on unmanned aircraft, emphasizing advanced algorithm development and rigorous software testing to optimize performance.
- Engineered flight systems and image analysis software using OpenCV, integrating a Python-based obstacle avoidance system with Aruco tags to elevate obstacle detection and tracking capabilities.
- Utilized Python data grouping techniques to analyze shipping patterns from AIS data, integrating data structures, algorithms, and GeoJSON for STL anomaly detection, enhancing anomalous behavior identification.
- Performed flight tests and demonstrations to boost autopilot reliability and enhance autonomous flight safety.

### Additive Manufacturing Lab Technical Supervisor

Terrapin Works

August 2023 – May 2024

- Executed customer-specific manufacturing using additive manufacturing technologies (FDM, Resin, Nylon), ensuring precision and adherence to design specifications.
- Directed training programs for lab technicians, optimizing skills development and operational efficiency. Oversaw lab workflows, ensuring consistent quality of manufactured parts.
- Led development and production of aerodynamic components in collaboration with Formula SAE competition, enhancing consistency of component quality.
- Developed new processes to optimize GCODE files to improve part quality, reduce error rates, and minimize wasted materials.

### Information Technology Internship

Baltimore County Public Schools

August 2019 – June 2021

- Maintain network systems in order to streamline processes.
- Conducted comprehensive audits of security vulnerabilities within local networks.
- Collaborated with the technology team on various projects, demonstrating problem-solving skills and a passion for technology by learning new software and tackling challenging tech problems, thereby fostering a culture of continuous improvement and innovation.

## PROJECTS

### Game Developer

Independent • 2022 – 2024

- Contributed to the development of a submarine simulation in C#, implementing with Unity Game Engine, focusing on procedural terrain generation.
- Optimized terrain generation algorithms, enhancing game performance by improved frame rates on standard hardware, showcasing problem-solving and reliability in technology implementation.
- Engaged in continuous learning and application of new technologies, including data structures and software testing, to ensure the game's optimization and reliability.
- Collaborated with peers in algorithm development and testing phases, demonstrating teamwork and a passion for technology, leading to a more robust and engaging game experience.

### UAV Research Assistant

UMD Department of Aerospace Engineering • 2022 – 2023

- Developed and implemented Python-based algorithms for UAV flight path planning, integrating geospatial data analysis and navigation technologies for enhanced efficiency.
- Designed and executed a simulation tool for UAVs in ROS to assist in training industry professionals.