

Blake Webb

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EDUCATION

BS in Computer Engineering

University of Maryland-Baltimore County • Glen Burnie, Maryland • GPA: 3.4/4.0 • 08/2022 - 05/2026

- Heritage Merit Scholarship Recipient.
- Louis Stokes Alliance for Minority Participation (LSAMP) Scholar - an NSF-funded program that supports and encourages the participation of minorities in STEM research.

WORK EXPERIENCE

Undergraduate Robotics Researcher •

University of Maryland-Baltimore County | Baltimore, Maryland • 02/2024 - Present

Supervised by Dr. Ryan Robucci

Reducing Data Overload in Object Tracking: Differential Camera Systems in Physical and Simulated Environments

- Independently developed an **event-driven camera system** for robotic manipulation to track objects.
- Built a **3D robotic arm simulation** in Gazebo and Blender for physics-based experiments.
- Implemented **real-time image processing** in Python, integrating OpenCV with ROS2.
- Presented findings at the Summer Undergraduate Research Fest 2024 and the Louise Stokes Alliance for Minority Participation Symposium 2025, improving the understanding of vision-based robotics.

Undergraduate Computational Chemistry Research Assistant •

University of Maryland-Baltimore County | Baltimore, Maryland • 06/2025 - 08/2025

Supervised by Dr. Joseph Bennett

Analysis of Surface Transformations and Electronic States of Hydrogen and Fluoride Terminated MXenes

- Conducted density function theory calculations using **Quantum ESPRESSO** for analysis of 2D materials for art conservation
- Created a **Python** program to automate the generation of supercell input files, streamlining workflows and enhancing the efficiency of quantum-mechanical calculations.

Immunology High school Research Assistant •

University of Maryland School of Medicine| Baltimore, Maryland • 08/2021 - 09/2021

Supervised by Dr. Nevil Singh

Identification of the Novel Immunotherapeutic Targets for the Treatment of Cancer

- Assisted a PhD student in **genetically modifying bacteria** using PCR, minipreps, and cloning techniques.

Data Analysis High school Research Assistant • Remote • 07/2020 - 08/2020

Supervised Dr. Amy Weinmann

Comparative Analysis of Immune Signatures Following COVID-19 Infection

- Analyzed **RNA sequencing datasets from COVID-19 patient samples** using **Excel** to identify trends in gene expression.

University of Maryland-Baltimore County Residential Life •

Catonsville, Maryland • 08/2024 - Present

Apartment Community Resident Assistant • Part-time

- Managed a community of **47 residents**, providing support, conflict resolution, and resources.
- Organized monthly events to support student well-being and community-building.

VOLUNTEERING & LEADERSHIP

UMBC Housing & Residential Life – Peer Advisor

08/2023 - 10/2023

Welcome Week Woolie • Catonsville, MD

- Led a **group of 30+ first-year students**, guiding them through their first six weeks on campus.

SKILLS

Project Management, Real-time Image Processing, Technical Writing

Programming: C/C++, Data Structures, Machine Learning, MATLAB, Python

Hardware: Circuits, Microcontrollers, PSPICE/ Cadence, Signal Processing

Mathematics: Calculus, Discrete Math, Linear Algebra

Tools & Platforms: Gazebo, Linux (Ubuntu)

PROJECTS

Microwave Landing System Project

02/2025 - 05/2025

- Collaborated in a **team of 8 engineers** to design a microwave landing system, split into **two subteams**: timing control and signal generation.

Digital Noise Filter

11/2024 - 12/2024

- Applied **signal processing techniques** to improve audio clarity while preserving key frequency components.

3D Modeled Robotic Arm

07/2024 - 09/2024

- Designed and **3D modeled a robotic arm** in Blender for physics simulations in **Gazebo**.