# Brian Wu

240-755-7999 | Elkridge, MD 21075 | bwu32@umd.edu | linkedin.com/in/brianpwu

## EDUCATION

**University of Maryland,** College Park, MD **Expected Graduation: May 2026**

- *B.S. Computer Engineering*
- *Honors College: Design, Cultures, and Creativity (DCC)*
- *Startup Shell: Product Design & Engineering*

## PROJECTS

**Autonomous Submersible Vehicle Project** August 2025 — December 2025

*Smart Submersible Marine Vehicles*

- Led structural and mechanical design of a watertight, autonomous submersible vehicle, authoring CAD drawings of external mounts and primary electronics housing for easy component installation.
- Engineered vehicle's watertight sealing strategy, utilizing custom-machined components and epoxy/silicone seals to protect internal electronics from possible water ingress.
- Acted as primary structural design expert while contributing to software development, responsible for electronics soldering and developing distance tracking software for the vehicle to utilize during operation.

**Fortnite Linkedin Auto Poster** June 2025 — December 2025

- Implemented a social media automation tool in python that utilizes a computer vision and OCR hybrid model to achieve real-time win (victory royale) detection in the hit videogame Fortnite Battle Royale for posting onto LinkedIn.
- Architected a multi-mode posting engine (full/semi auto), integrating Selenium/LinkedIn API for session persistence, image uploading, seamless background operation, and OpenAI API to generate funny and awesome personalized posts with various personality profiles.

**CAN Bus Security Simulation** September 2025 — December 2025

*Computer Systems Security*

- Developed a real-time Control Area Network (CAN) Bus security framework simulation framework in python with multi-threaded ECU architecture and 4 layered defenses (AES, HMAC, Rate Limiting, IDS).
- Created full-stack visualization dashboard using React and Websocket protocol to monitor live attack scenarios and security metrics.
- Achieved 100% detection and prevention of spoofing/flooding/replay attacks while maintaining <2ms latency.

**Cell Type & Disease Status Classification of scRNA-seq Cancer Microenvironment Data** October 2025— December 2025

*Foundations of Machine Learning*

- Formulated a two-layer hierarchical machine learning pipeline using AdaBoost and ensemble majority voting to classify single-cell RNA sequencing (scRNA-seq) data.
- Achieved 100% accuracy on cell type identification (Cancer, T_Cell, Fibroblast) and 87.5% overall accuracy on disease status prediction (Tumor vs. Healthy).
- Strategically optimized model for imbalanced data by utilizing weak learner models within AdaBoost framework.

## EXPERIENCE

**Research & Design Assistant** October 2025 — Present

*Professor Romel Gomez*

- Collaborated with professor on assorted research and engineering projects, tackling and solving complex functional challenges across multiple mechanical and electromechanical domains.
- Engineered an autonomous catch-and-release system for a drone landing platform, integrating linear actuators to power a secure magnetic deployment and retrieval function.
- Pioneered a zero-tolerance docking system, anchoring a rotating core and custom magnetic drone legs to enable successful capture and magnetic interlock from any landing angle.

## SKILLS & RELEVANT COURSEWORK

**Programming & Data:** Generative AI prompting, OpenAI API, Python, Java, C, Node.js, React, Excel, Microsoft Office Suite, Google Workspace, Ubuntu (Linux), Windows, Docker, Proxmox, Selenium, Arduino, Websocket, Nessus, MATLAB data analysis
**CAD & Design:** Fusion 360 CAM & FEA, SolidWorks, Inventor, Blender, Adobe Illustrator, Photoshop, Premiere Pro, Figma, Canva, Audacity, PrusaSlicer, Paint.NET, GD&T, DFM, 3D Printing, CNC Machining, Laser cutting, Soldering, Sewing

**Computer Science:** Computer Systems Security, Foundations of Machine Learning, Algorithms, Database Design, Operating Systems, Organization of Program Languages, Computer Systems, Discrete Structures, Computer Graphics
**Computer / Electrical Engineering:** Computer Organization, Digital Computer Design, Digital Logic Design, Electric Circuits, Microelectronics, Discrete Signal Analysis, Smart Submersible Marine Vehicles, Advanced Manufacturing