Alexis Cruz-Ayala

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Robotics and Embedded Systems Researcher | Software Engineer

EDUCATION

Duke University | Durham, NC | Graduation Expected in May 2025 | Current GPA: 4.00

- **Majors: Electrical and Computer Engineering (B.S.E.), Computer Science (B.S)**
- **Minors: Mathematics, Machine Learning and Artificial Intelligence**
- **Questbridge National College Match Recipient | Gates Scholarship Recipient**
- **Relevant coursework: Operating Systems, Software Design & Implementation, Computer Systems/Architecture, Data Structures & Algorithms, Linear Algebra, Differential Equations, Signal Processing**

WORK EXPERIENCE

U.S. Department of Energy | Robotics Engineer Researcher | Miami, FL | May 2022 – Aug 2022

- Worked on a robotic exoskeleton device for glovebox use in nuclear waste sites
- Derived control theory for modelling robot; programed embedded devices to control the motors and sensors; maintained and designed electrical components such as CAN buses and PCB boards.
- Contact: Ou Bai - obai@fiu.edu

Duke University | Robotics and Embedded Systems Researcher | Durham, NC | Dec 2021 – Jun 2022

- Research focused on the design of a drone cyber-physical system meant for trajectory planning and obstacle avoidance
- Used AI/Deep Learning on an Nvidia Jetson Nano and an Intel Realsense D435. (Programmed in Python TensorFlow)
- Practiced elements of computer vision and embedded systems design (Programmed in C++)

Duke University | Neural Network Architecture Junior Designer | Durham, NC | Sept 2021 – Dec 2021

- Developed a neural network designed to take myographical sensor data and classify it under multiple grasp types for a prosthetic hand (Programed in Python Pytorch).
- Contact: Aditya Paul - aditya.paul@duke.edu

Duke University | Machine Learning Applications Researcher | Durham, NC | Sept 2021 – Jan 2022

- Studied the application of convolutional neural network algorithms on the detection and classification of stingray pits in drone imagery. (Programmed in Python TensorFlow)
- Contact: Anjali Boyd - anjali.boyd@duke.edu

Matrix Labs | Software Developer/Research Intern | Miami, FL | Jun 2019 – Aug 2019

- Researching Bluetooth integration into the Matrix Voice board, as well as investigating the capabilities of the ESP32 chip installed on it. (Programmed in C/C++, JavaScript, Python and Go).
- Contact: Samreen Islam – samreen.sfi@gmail.com

ORGANIZATIONS

Duke IEEE Student Group | Member | 2022 – Present

- A prospective officer of Duke IEEE, I foster other students' interests in computer vision, analog electronics, control theory, and other electrical engineering topics through hands-on projects and national competitions.

Academy Of Model Aeronautics | Drone Computer Vision Team Leader | 2021 – Present

- The mission of AMA is to create a space for students to explore the wide use of drones. The club provides instruction on how to safely and effectively work with drones and facilitates student projects that develop new applications

FIRST Robotics Competition | Team Captain | 2017 – 2021

- A world-wide robotics competition revolving around a new design challenge every year. Teams must design, manufacture, build, and program a robot to compete alongside others in a two-minute game with a fifteen second autonomous period.

SKILLS

Research: Embedded Systems, Robotics, Computer Vision, Control Theory
Electronics: Learning Autodesk Eagle, Analog Circuits
Development Boards: Linux, Raspberry Pi, Arduino, Jetson Nano, Intel Realsense Cameras**,** FPGA/Verilog
Programming: Java, C++, Python, C, MATLAB, x86 Assembly, Rust Lang, Ruby, Node.js, Javascript, Go
CAD Software: AutoCAD Certified, Solidworks Certified
Machine Learning: TensorFlow, Pytorch, Sklearn, Keras
Languages: Spanish

REFERENCES AND PROFILES

- **LinkedIn**: https://www.linkedin.com/in/alexis-cruz-ayala-076113190/
- **Hackster.io:** https://www.hackster.io/alexis-cruz
- **GitHub**: https://github.com/alexiscruzdavid