Brandon E Martinez

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EDUCATION

BS in Computer Science, *University of Notre Dame* — Notre Dame, IN
Minor in Engineering Corporate Practice — May 2027
Relevant Coursework: Data Structures, Systems Programming, Linear Algebra, Discrete Mathematics, Microeconomics

EXPERIENCE

Domer Rover — Notre Dame, IN
Autonomous Navigation Engineer — January 2024

- Developed and deployed **C++** image recognition systems for autonomous navigation using **YOLOv8**, integrating machine learning algorithms on NVIDIA Jetson Nano hardware
- Engineered GNSS and IMU sensor publishing and subscriber nodes in **ROS 2** Humble (Python, serial, rclpy), enabling real-time data streams for autonomous path planning
- Designed and implemented deserialization methods of NMEA protocol GPS sentences for motor board instructions needed for antenna rotation computations and functionality
- Built camera calibration and ArUco marker detection modules in **Python** with **OpenCV** 4.11+ and pose estimation, improving object detection reliability and camera features
- Led hardware setups with Arduino, Raspberry Pi, and GPS/IMU boards, contributing to a **15%** improvement in Search and Rescue evaluation performance
- Coordinated task delegation and documentation across software and hardware teams for recruitment

PROJECTS

ND Data Club — Notre Dame, IN
P&G Project Member — August 2024

- Developed scalable sentiment analysis models on 17,000+ real-world product reviews using VADER and RoBERTa classifiers in **Jupyter** Notebooks.
- Applied data preprocessing (pandas, numpy), TF-IDF tokenization, and log transformations to optimize Naive-bayes and Logistic Regression model implementation and performance
- Achieved up to **85%** predictive accuracy, presenting results through custom visualizations built with Matplotlib and Seaborn.

Personal Portfolio Website — August 2024

- Built a personal portfolio website using HTML, CSS, and **JavaScript**, later enhanced with **React.js native**, SVG animations, GSAP (GreenSock), and ScrollMagic for seamless user interaction

C Linux — February 2025

- Developed a collection of Linux utilities and system tools in C, reimplementing core Unix commands to deepen understanding of systems programming concepts.
- Implemented programs involving file I/O, string manipulation, memory management (heap, stack, dynamic allocation), signal handling, and socket communication.
- Developed shell scripts and Python utilities to automate workflows, applying functional programming techniques, object-oriented design, and beginner-level concurrency (multithreading) concepts.

Robotic Football Club — Notre Dame, IN
Software Team Member — March 2024

- Programmed and debugged robotic lineman microcontrollers using Python and Arduino IDE.
- Contributed to automation of "pre-snap" robot positioning by implementing controller input scripts and Unix shell scripting.

TECHNICAL SKILLS

Languages: CSS, C/C++, HTML, JavaScript, MATLAB, Python, TypeScript
Frameworks: React.js, Node.js
Tools: Bourne Shell (sh), Docker, Git, Github, JupyterLab, ROS-2, Vim, Unix/Linux