

# Nathan Adkins

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## Education

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<b>West Virginia University</b> , Morgantown, WV	Aug 2021 - May 2025
<i>Bachelor of Science in Computer Engineering (ABET), Minor in Computer Science, Minor in Economics</i>	GPA 3.45

## Internships & Experience

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<b>WVU Interactive Robotics Laboratory</b> , Morgantown, WV	
<i>NSF-Funded REU Researcher</i>	May 2023 – Aug 2023
<ul style="list-style-type: none"><li>Integrated an autonomous navigation system utilizing a LiDAR, IMU, and SLAM algorithms.</li><li>Gained experience with ZED stereo cameras, Intel RealSense depth cameras, and ROS2.</li><li>Researched creating real-time human safety maps in retail spaces using an autonomous mobile robot.</li><li>Developed a live safety data mapping tool for retail spaces using wheel odometry and semantic segmentation.</li></ul>	
<i>Research Intern</i>	May 2022 – Apr 2023
<ul style="list-style-type: none"><li>Co-authored an IROS 2023 paper on swarm robotics and robotic morphogenesis.</li><li>Studied emergent behavior in robotic swarms utilizing biologically inspired design.</li><li>Programmed microcontrollers in C and Python to gather environmental data from I2C sensors.</li><li>Developed a scalable software architecture for a unique robotic swarm system utilizing Python and ROS.</li></ul>	

## Projects

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<b>WVU University Rover Challenge Team</b> , Morgantown, WV	
<i>Algorithms Lead</i>	Aug 2023 – May 2025
<ul style="list-style-type: none"><li>Led a small team of programmers in developing a robot autonomy system capable of navigating a mock Mars environment, placing second in the 2024 international competition.</li><li>Trained a custom YOLO model, enhancing its performance using the Albumentations library for data augmentation.</li><li>Designed an autonomous navigation system with a PRM global planner and SLAM-based local planner.</li><li>Built a React-based robot control interface including a map system, robot diagnostics, and live camera streams.</li></ul>	
<i>Programming Lead</i>	Aug 2022 – Jul 2023
<ul style="list-style-type: none"><li>Led a team of 20+ programmers in designing and developing a robot capable of autonomously navigating a mock Mars environment, achieving a first place victory in the 2023 international competition.</li><li>Developed a CAN and UART motor library in Python and C++ for use on robot manipulator and drivetrain motors.</li><li>Gained experience integrating GPS and IMU in an rover autonomy stack.</li></ul>	
<i>Programmer</i>	Feb 2022 – Jul 2022
<ul style="list-style-type: none"><li>Learned ROS and ROS2 through Python and C++ programming and hands-on robot testing.</li><li>Gained proficiency in Ubuntu Linux by troubleshooting robot hardware and software.</li></ul>	

## Awards

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<i>Second Place, 2024 University Rover Challenge</i>	June 2024
<i>Statler Research Scholarship</i>	Fall 2023, Spring 2024
<i>First Place, 2023 University Rover Challenge</i>	June 2023

## Publications

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Smith, T., Butts, M., Adkins, N., Gu, Y., "Swarm of One: Bottom-up Emergence of Stable Robot Bodies from Identical Cells," IEEE/RSJ IROS 2023, Oct 2023.

## Skills

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**Languages:** Python, C, C++, JavaScript, MATLAB, Bash  
**Software:** Ubuntu Linux, Git, ROS (Robot Operating System), ROS2, React, OpenCV, Matplotlib  
**Hardware:** GPS, IMU, LiDAR, Depth Cameras, Microcontrollers, UART, CAN, I2C  
**Engineering:** System Integration, Technical Documentation, Software Design, Project Management