

# Dhruv Chavan

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## EDUCATION

**The Ohio State University**

B.S. in Data Analytics - *Honors and Scholars Student*

**Expected Graduation: Spring 2027**

GPA: 3.66/4.0

## SKILLS

- **Languages:** Python, C++, MATLAB, Linux
- **Hardware/Platforms:** Arduino, Raspberry Pi, Jetson, BNO055 IMU, Marvelmind
- **Tools/Frameworks:** ROS2, OpenCV, SciKit-Learn, GitHub, CMake

## EXPERIENCE

**Undergraduate Aerospace Researcher** | *Python, MATLAB, C++, ROS2, Arduino*

**January 2025 - Present**

*Department of Mechanical and Aerospace Engineering at OSU*

*Columbus, OH*

- Reducing drone orientation error by **85%** by implementing Kalman filter on BNO055 IMU from scratch
- Designed a 3-DOF IMU test stand with ground truth encoder feedback; accepted at AIAA 2026
- Engineering  $\leq 10\text{ms}$  latency sidestick controller for *Honda Aircraft Co.* simulator with **500Hz** force feedback
- Achieving **2cm** accuracy and **95%** success rate, leading Marvelmind based autonomous drone indoor navigation
- Producing **5cm** navigation accuracy by architecting a ground robot in C++/Python on Raspberry Pi
- Developing a wildfire payload fusing RGB and infrared sensors with Jetson inference at **30ms** and **92%** accuracy

**Data and AI Engineering Intern** | *Python, PostgreSQL, Docker, LLMs*

**September 2025 - December 2025**

*BMW Financial Services*

*Columbus, OH*

- Built MCP server tools connecting internal LLMs to PostgreSQL, improving data retrieval efficiency by **45%**
- Developed **3** Gen AI apps spanning fraud detection, business intelligence, and call center automation
- Launched an AI governance platform enabling **95+** employees to submit model requests for compliance protocols

**Undergraduate Student Researcher** | *Python, Pandas, Power BI, MySQL, Matplotlib*

**July 2024 - Present**

*OSU Wexner Medical Center - Assistive Technology Data Analysis*

*Columbus, OH*

- Analyzing **4,000+** patient data points; findings presented to clinicians led to a **25%** improvement in outcomes
- Applying hypothesis testing to identify demographic correlations and create visual representations
- Published research as second author at the international RESNA conference and attended the 2025 Rehabweek

**Undergraduate Computational Biology Researcher** | *Python, R, Pandas*

**February 2024 - June 2025**

*Nationwide Children's Hospital - Computational Modeling in Immune Response*

*Columbus, OH*

- Developed advanced visualizations to analyze brain cancer cell interactions with immune cells
- Analyzed **1.2M+** spatial data points from **30+** tumors, revealing cell clustering linked to ICI response
- Published a paper to *iScience* journal after designing algorithms to analyze tumor structures across cell types

## PROJECTS

**Autonomous Lego Technic Bugatti** | *Python, C++, ROS2, OpenCV, Arduino, Fusion 360*

**May 2026**

- Achieved **80%** lane-following accuracy via adaptive thresholding at **30fps**, publishing steering at **20Hz**
- Reduced path deviation by **75%** fusing IMU with camera via Extended Kalman Filter over camera-only
- Architected **7-node** ROS2 Jazzy stack separating perception, planning, and safety layers mirroring AV stacks
- Engineered safety node stopping the vehicle within **20cm**; achieved **76%** parallel parking success over **25** trials

## LEADERSHIP

**Mount Scholars Leadership Society** | *Member*

**August 2023 - Present**

- Led Team Security initiatives and developed leadership through weekly training, mentorship, and retreats
- Completed **75+ hours** mentoring athletes with Down syndrome through weekly tennis sessions and events