

RYAN CHRIST

585-737-3757 | ryan.christ@duke.edu | linkedin.com/in/ryan-christ-92660126b

Visit my portfolio: ryanjchrist.github.io

EDUCATION

Duke University

Bachelor of Science in Mechanical Engineering & Computer Science

Cumulative GPA: 3.71 / 4.0, Dean's List 2023

August 2022 - Present

Durham, North Carolina

EXPERIENCE

Electrical Engineer | O3ST - UAVs in Support of Marine Science, Virtual

(Part-time) September 2024 - Present

- Designing a custom PCB in KiCad to integrate multiple sensors and simplify UAV altimetry system wiring, reducing harness complexity and improving reliability while creating a modular layout for future sensor expansion.
- Integrating LW20/C Laser Rangefinder (I²C) and GP1818MK GPS (UART) improving positional accuracy and minimizing footprint.
- Recalibrating and redesigning the altimeter system to reach ±1 cm accuracy and ensure compatibility with DJI Phantom, Mavic, Inspire, and Skydio 2+ drones, including a new SolidWorks housing optimized for modular integration.
- Developing firmware in PlatformIO and Arduino IDE for XIAO nRF52840 & SAMD21, ProMicro, and Feather M0 controllers.
- Enhancing data logging with IMU tilt compensation, a 1D Kalman filter for noise reduction, and time/date-based file naming.

Mechanics of Solids Teaching Assistant | Duke Pratt School of Engineering, Durham, NC

August 2024 - Present

- Leading labs for EGR 201 and instructing students in the operation of the Tinius Olsen H50KS Load Frame and Lo-Torq Machine to analyze tension, torsion, and buckling material failures, emphasizing the practical applications of material testing.
- Facilitating weekly problem-solving discussions, guiding students through mechanics applications in a collaborative setting.
- Teaching students how to apply principles of statics, dynamics, mechanics, and stress analysis to solve engineering problems.

Engineering Intern | Monroe County - Department of Transportation, Rochester, NY

May 2024 - August 2024

- Performed structural analysis of traffic signal masts, calculating moment arms under wind, ice, and load factors and validating results with software to ensure compliance with modern codes and safety standards.
- Streamlined inspection and reporting for 192 bridges and 344 major culverts by developing standardized SAP/Excel templates.
- Reviewed schematics for electrical and structural signal assemblies and drafted new parking lot layouts in AutoCAD.

Seasonal Construction Worker | RJ Christ Excavating & Paving, Hilton, NY

May - August, June 2018 - August 2025

- Excavated, graded, and paved residential and commercial asphalt driveways.
- Operated and maintained heavy machinery including excavators, loaders, backhoes, pavers, and dump trucks.
- Restored a 1969 Dodge Coronet by rewiring electrical systems, welding body panels, and replacing gaskets, seals, and bearings.

RESEARCH & PROJECTS

Researcher - Cyber-Physical Systems Lab | Duke University, Durham, NC

May 2025 - July 2025

- Machined and end-milled shortened carbon-fiber arms for the X500 drone, reducing footprint while maintaining flight dynamics.
- Developed custom ROS nodes and integrated micro-ROS with XRCE-DDS agents to enable joystick-based control via PS4 and Vicon motion capture, validating functionality in Gazebo before physical testing.
- Explored acoustic attack strategies for drone-on-drone engagement and began development of a custom UAV platform.

Bass Connections Researcher | Duke University, Durham, NC

April 2024 - May 2025

- Conducted UAV field flights to capture elephant body condition images, optimizing altitude and speed to minimize disturbance.
- Analyzed acoustic profiles of DJI Mavic and Phantom drones with Python, Raven, and R to assess UAV noise on elephant behavior.
- Recorded drone noise during controlled descent flights and compared SPL across 1/3 octave bands with elephant hearing thresholds.

TECHNICAL SKILLS

Technical: Machining, Soldering, Welding

Tools: SolidWorks, ANSYS, LabVIEW, KiCad, Fusion, Gazebo, AutoCAD

Programming: C, C++, Python, MATLAB, Java, Verilog, MIPS, ROS, LaTeX (used to create this document)

SOCIAL ENGAGEMENTS

Club Member: Men's Club Soccer, Duke University Triangle LabVIEW User Group, ASME, IM Soccer

Volunteer: Hilton Elementary School - TA, Tutoring

Sports-Engagements: Soccer, Running, Climbing, Golf