Ryan Christ

585-737-3757 ryan.christ@duke.edu linkedin.com/in/ryan-christ-92660126b
Visit my portfolio: ryanjchrist.github.io

Duke
PRATT SCHOOL of ENGINEERING

Education

Duke University **August 2022 - Present**
Bachelor of Science in Mechanical Engineering & Computer Science *Durham, North Carolina*
Cumulative GPA: 3.71 / 4.0, Dean's List 2023
Relevant Coursework: Thermodynamics, Fluid Dynamics, Heat & Mass Transfer, Statics & Dynamics, Mechanical Design, Control Systems, Mechatronics, Computer Architecture, Digital Systems, Design & Analysis of Algorithms, Data Structures, Applied ML

Experience

Electrical Engineer | *O_3ST - UAVs in Support of Marine Science, Virtual* **September 2024 - Present**
- Designed 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.
- Integrated LW20/C Laser Rangefinder (I^2C) and GP1818MK GPS (UART) improving positional accuracy and minimizing footprint.
- Recalibrated and redesigned 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.
- Developed firmware in PlatformIO and Arduino IDE for XIAO nRF52840 & SAMD21, ProMicro, and Feather M0 controllers.
- Enhanced data logging with IMU tilt compensation, a 1D Kalman filter for noise reduction, and time/date-based file naming.

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.

Mechanics of Solids Teaching Assistant | *Duke Pratt School of Engineering, Durham, NC* **August 2024 - Present**
- Led labs for EGR 201 and instructed 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.
- Facilitated weekly problem-solving discussions, guiding students through mechanics applications in a collaborative setting.
- Taught students how to apply principles of statics, dynamics, mechanics, and stress analysis to solve engineering problems.

Seasonal Construction Worker | *RJ Christ Excavating & Paving, Hilton, NY* **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.
- Restoring a 1969 Dodge Coronet by rewiring electrical systems, welding body panels, and replacing gaskets, seals, and bearings.

Research & Projects

Cyber-Pysical Systems Lab | *Duke University, Durham, NC* **May 2025 - Present**
- 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 developing a custom UAV platform for research.

Bass Connections Research | *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