

Benjamin Walleshauser

Clarkson University
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- PERSONAL PROFILE** Currently I'm a research based MS student at Clarkson University in the MAE Department. My research is in the Astronautics and Robotics Lab, where I'm focusing on the dynamics, control, and emulation of small satellites.
- ACADEMIC BACKGROUND**
- Mechanical Engineering MS* Jan. 2023 - Present
Clarkson University, Potsdam, NY
- GPA: 4.0/4.0
- Mechanical Engineering and Physics BS* Sep. 2019 - Dec. 2022
Clarkson University, Potsdam, NY
- GPA: 4.0/4.0
- EXPERIENCE**
- Graduate Research Assistant* Jan 2023 - Present
Clarkson University, ASTRO Lab, Potsdam, NY
Advisor: Michael Bazzocchi
- Creating an active three axis gimbal to perform hardware-in-the-loop testing on different CubeSat attitude determination and control systems. Proposed design is capable of replicating conditions in space experienced during a space debris removal mission.
 - Developing attitude control algorithm to be implemented on CubeSat software for space debris removal missions.
- Undergraduate Research Assistant* Mar. 2021 - Dec. 2022
Clarkson University, Chaos Lab, Potsdam, NY
Advisor: Erik M. Bollt
- Focus on development and application of minimalist machine learning methods in the areas of modelling and control.
 - Applied model reduction techniques to pre-process data.
 - Areas of machine learning application include: geophysical phenomena, PDEs, and logical operators.
- Grading Assistant* Aug. 2022 - Dec 2022
Clarkson University, Physics Department, Potsdam, NY
- Grade and provide feedback on student assignments for Clarkson University's course in Modern Physics.
- Engineering Intern* May 2022- Aug. 2022
MacLean-Fogg, Engineering Department, Buffalo, NY
- Developed process to reduce and better manage rejects for top selling product.
 - Helped engineers complete several production part approval processes.
 - Worked with machinists and gauged parts using lab equipment.

Small Group Tutor Jan. 2020 - May 2021
Clarkson University, Tutoring Center, Potsdam, NY

- Tutored for several classes in the areas of mathematics and engineering sciences.
- Strong communication with class inside and outside of sessions to ensure they understand course material.

JOURNAL PAPERS

Walleshauser, B., Bazzocchi, M., (2024). *CubeSat Attitude Control Emulation Platform with Three-Axis Gimbal and Helmholtz Cage*. Preprint (Under Review)

Walleshauser, B., Boltt, E., (2022). *Predicting Sea Surface Temperature with Coupled Reservoir Computers*. Nonlinear Processes in Geophysics

CONFERENCE PAPERS

Walleshauser, B., Bazzocchi, M., (2024). *Development of a Gimbal-Based CubeSat Attitude Control Emulation Platform*. 2024 AIAA SciTech Forum

PRESENTATIONS

Walleshauser, B., Bazzocchi, M., (2024). *Development of a Gimbal-Based CubeSat Attitude Control Emulation Platform*. 2024 AIAA SciTech Forum Technical Presentation

Walleshauser, B., Boltt, E., (2022). *Predicting Sea Surface Temperature with Coupled Reservoir Computers*. Clarkson University Research and Project Showcase, Spring 2022

AWARDS

- NASA NYSG Opportunity Grant: May 2023
- Session Top Scorer: Clarkson University - Research and Project Showcase: Data Science, May 2022
- Best Prototype: Clarkson University - President's Challenge, May 2022
- Most Commercially Viable Product: Clarkson University - President's Challenge, May 2022
- 7x Presidential Scholar: Clarkson University, June 2022

PROJECTS

Charging Platform for Commercial Drones Apr. 2022 - Dec. 2022
ME445/ME446 Capstone Senior Design, Clarkson University, Potsdam, NY

- Working to create a charging platform for commercial drones such as the DJI Mavic 3, under the instruction of Professor Visser.
- Doing so extends mission time indefinitely, hence we are looking at the specific application of attaching these to off-shore wind turbines for remote inspection.

Chicken Coop Automation Dec. 2021 - May 2022
President's Challenge, Clarkson University, Potsdam, NY

- Worked with team of student's and professors to prototype a chicken coop which is capable of operating autonomously with the use of a robotic arm and a variety of cameras and sensors.

- Tasks which I completed included the programming of software on the Raspberry Pi, interfacing hardware, and the design and fabrication of several components.

Lawn Rover

Dec. 2021 - Present

Personal Project

- Prototyping a rover to travel around one's yard and be able to identify and cut down weeds.
- Current version uses an array of ultrasonic sensors facing the ground to detect surface anomalies.

SKILLS

Programming

- MATLAB
- Python
- C++
- RStudio
- Arduino

CAD Tools

- SolidWorks
- Autodesk Inventor
- Creo Parametric
- Siemens NX
- Ansys (Fluent and AEDT)
- Simulab
- Solid Edge
- iSight Optimization

Others

- Systems Tool Kit (L2 Certified)
- 3DS MAX
- Basic Shop Skills
- 3D Printing
- GD&T and Metrology

WORKSHOPS

Undergraduate Workshop on Dynamics of Excitable Systems, Georgia Tech, July 2021.

LEADERSHIP

Treasurer

Mar. 2022 - Jun. 2023

Tau Beta Pi, NY Theta Chapter, Potsdam, NY

- Manage finances and collaborate with other board members for Clarkson's chapter of Tau Beta Pi (the oldest engineering honor society).
- Beginning to reach out to prominent alumni to attempt to schedule in-person meeting with the chapter.
- Assist with initiation and student recruitment.

Treasurer

Mar. 2022 - Dec. 2022

Buffalo Club, Potsdam, NY

- Serve as treasurer for Clarkson University's Buffalo Club - a group where students from the Buffalo area can meet.