# ODALYS BENITEZ

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## EDUCATION

Olin College of Engineering — May 2022
Engineering: Robotics

## SKILLS

**MECHANICAL DESIGN:** Autodesk Inventor, Solidworks, PTC Creo, ANSYS, Mathematica
**LOGISTICS & MANAGEMENT:** HardCat, Microsoft Project, Trello, Whimsical, Notion
**SOFTWARE DEVELOPMENT:** MATLAB, Python, Mathematica, C/C++, STM32
**ASTRONOMICAL SOFTWARE:** Source Extractor, Scamp, DS9, Aladin, Astrometry.net, ArcGIS Pro
**DESIGN SOFTWARE:** Adobe Illustrator, Adobe Photoshop, Adobe Lightroom, Krita

## PROJECTS

### PAGER FOR COMMUNAL LIVING — Jan. 2021 to Current
- Designed two PCBs, programmed with STM32 and 433 MHz RF modules
- The transmitter consists of four LED buttons that communicate breakfast, lunch, dinner, and meeting to the receiver.
- Receiver consists of an LED array programmed with SPI and I2C, enclosed in a diffused box
- Priorities of the design were to be extremely low-power.

### ACCESSIBILITY-INCLUSIVE DESIGN FOR RURAL CABIN — Sept. 2020 to Current
- Led a user-centered and universal cabin design project at Woodland Harvest Mountain Farm
- Designed for various stakeholders like senior relatives, students needing housing, and farm visitors
- Loosely referenced ADA code as applicable for rustic living

### OFF-GRID ELECTRICAL SYSTEM — Sept. 2020 to Current
- Helped integrate solar panels, micro-hydro, and generators to provide enough electricity to sustain a house of 15 college students, with 12 taking remote classes
- Created wire harness for documentation
- Installing terminal bars for centralization and easy access

### NASA-FUNDED ASTEROID DISCOVERY RESEARCH — Aug. 2019 to Current
- Worked with Dr. Carrie Nugent to build software pipeline to discover near-Earth asteroids in archival data
- Addressed complex parameter optimization issues
- Developed programming ability, mainly including Python, command line unix, and astronomical software (Source Extractor, Scamp, Aladin, and SAO DS9)

### MONITORING VEGETATION INDEX IN MINAS GERAIS, BRAZIL — Jan. 2019 to May 2019
- Created multispectral composite images of areas affected by climate change using ArcGIS Pro
- Calculated normalized difference vegetation index of affected areas
- Presented at Olin College Poster Session

### ENGINEERING FOR HUMANITY — Jan. 2019 to May 2019
- Designed unique adaptable accessibility device for senior citizens
- Rapid prototyping at several visits with community partners
- Assessed community partner needs through continuous experimentation involving function, interaction, and character

### OLIN FORMULA ELECTRIC MOTORSPORTS — Aug. 2018 to May 2019
- Designed car suspension and wheel supporting geometry
- Performed stress analysis(FEA) in ANSYS

### SCARA DRAWING ROBOT — Aug. 2019 to Dec. 2019
- Calculated kinematics for SCARA-based actuator system on drawing platform
- Programmed G-code sender in Python
- Designated code for different modes of drawing

### ROLLING ROBOTS INSTRUCTOR — June 2019 to Aug. 2019
- Designed robotics curriculum for primary and secondary school students
- Worked with VEX, Autodesk CAD, and Scratch as educational resources

### CAMS ENGINEERING CAPSTONE — 2017 to 2018
- Led team of 40+ throughout development of multiple robotics projects and efforts
- Developed novel swarm robotics system capable of path following and obstacle circumvention
- Obtained funding from industry partners such as Northrop-Grumman and Motivo Engineering

### BOEING INTERNSHIP — June 2017 to Aug. 2017
- Conducted failure analysis for hardware systems and lifetimes
- Modeling within logistics management system HardCat
- Utilized Microsoft Project to organize intern team tasks and schedules

### MULTICULTURAL INNOVATORS EXPERIENCE — 2018 to 2019
- Helped found Olin's first club aimed at building support systems for students of color
- Designed fun programs to create a sense of community for adjusting students
- Collaborating with Olin faculty to develop mentorship opportunities