Contact

robercarrillog@gmail.com

www.linkedin.com/in/rober-carrillo (LinkedIn)

Top Skills

Printed Circuit Board (PCB) Design

C++

Robotics

Languages

English (Professional Working)

Spanish (Professional Working)

Certifications

High Power Rocketry certification level 1

Modern Robotics: Mechanics, Planning, and Control Specialization (In Progress)

Neural Networks and Deep Learning

Computer Vision Basics

SOLIDWORKS: Simulation for Finite Element Analysis

Rober Carrillo

BSE Aerospace & Mechanical Engineering | CWRU | Davis Scholar

Cleveland, Ohio, United States

Summary

I leverage engineering skills and initiative to drive impactful solutions. Recent highlights include:

• Led a project to build a first-of-its-kind drone imagery dataset to expand solar energy access to US homeowners. Led the 7-week, 5-states, 28+ flight hours, fieldwork collecting 19000+ HQ drone images with less than 1 cm ground sampling distance per pixel without a single incident.

• Initiated and led a Research and Development project at LAND Energy to build custom electronic tools, saving over $15K and monthly subscriptions from proprietary, external solutions, and saving valuable time in Quality Control.

• Contributed to a university-backed team in designing a hand-held ultrasound device at just 20% of the cost of current alternatives.

Guided by the idea that "a problem well-stated is half-solved", I aim to balance technical depth with clear goals. As an early-career engineer, I have one year of combined engineering experience developing solutions for dynamic startups.

Currently, I'm expanding my expertise through NYU's Modern Robotics specialization and seeking opportunities at the intersection of AI and robotics.

Experience

LAND Energy

Mechanical Engineering Intern

June 2023 - December 2023 (7 months)

Cleveland, Ohio, United States

• Led a 5-month-long project to build a comprehensive mathematical model of the range and performance of electric motorcycles following EPA standards. Increased the reliability of the information given to customers.
• I took the initiative to propose, design, and build an electronic component that logs, displays, and sends real-time data of test bikes to a cell phone.
I also used Python for automated communication between computers and motor controllers, and C++ for programming sensors, displays, Bluetooth communication, and decoding of CAN messages. VSCode and Github for project tracking and Android Studio for cellphone communication.
• Developed a QC process and apparatus to test electric motors to reduce production and QC times significantly. Used bash and Python scripting for communication and Solidworks for benchwork design.
• Designed and prototyped the electrical and software components of a motorcycle dynamometer that saved more than $15000 from using external solutions.•

Colossus
Machine Learning Intern
June 2022 - August 2022 (3 months)

• Automated tasks for the quality assessment of solar system designs reduced processing times by 50%.
• Applied Data Analysis with Python, Bash, Excel, and QGIS to obtain, present, and discuss relevant statistical information.
• Developed and presented a proof of concept for automated 3D visualizations of solar system designs.
• Performed annotations for multispectral data retrieved from API requests to analyze the quality of solar system designs.

Liceo Pino Verde
Laboratory Technical Assistant
July 2019 - August 2020 (1 year 2 months)
Pereira, Risaralda, Colombia

• Automated the creation of labels for chemicals following the NFPA guidelines, which has highly increased efficiency.
• Designed and run chemistry, biology, and physics experiments for groups of up to 30 students.
• Authored a 40-page framework of workflows and safe practices in the lab following national guidelines, which became implemented in an academic community of 300 students, decreasing accidents and lost material.
• Updated a catalog of over 200 instruments, tools, and chemicals.

Education

Case Western Reserve University

Bachelor of Science - BS, Aerospace, Aeronautical and Astronautical Engineering · (May 2020 - December 2024)

Arizona State University

Research at NASA's L'SPACE mission concept academy. · (May 2021 - August 2021)

United World College Mostar

· (August 2016 - May 2018)

Semester At Sea / ISE

· (2018 - 2018)

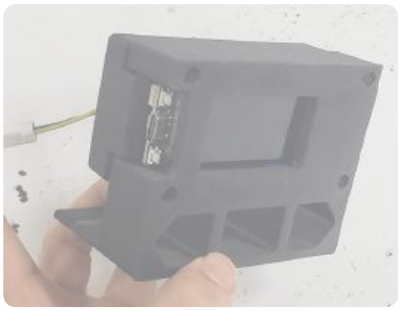
Rober Carrillo

CWRU 2024

Aerospace and Mechanical Engineer

Template: HTML5 UP

Previous Work

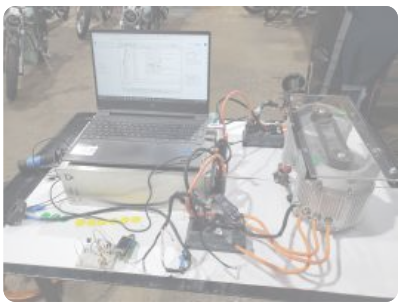


Motorcycle logger

Custom logger and display gadget with 3D printed case in Carbon Fiber filament, mounted on the front of the bike that displays the EPA UDDS drive cycles to the test driver, records bike's motor controller information through a CAN port and uses a low-pass filter to read the voltage from the bike's battery. Communicates with an app I made to display real-time information to test-driver or another person.

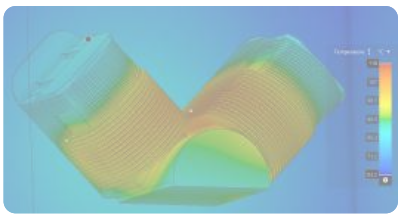
Prototype controller and board of logger

Prototype controller for custom motorcycle dynamometer, including: ESP 32 microcontroller programmed in C++, two CAN shields, display, SD card shield, two PWM to analog outputs and space to solder two analog manual inputs that control the throttle on the bike and the load on the dynamometer.



Electric Motor test bench

Use of custom and propietary controllers to compare performance and efficiency under



Heat transfer simulations

Detailed heat transfer analysis. Applied into Critical Design Reviews (CDR) and relevant product and engineering decisions for Design and Manufacturing II, senior-level

Rober Carrillo

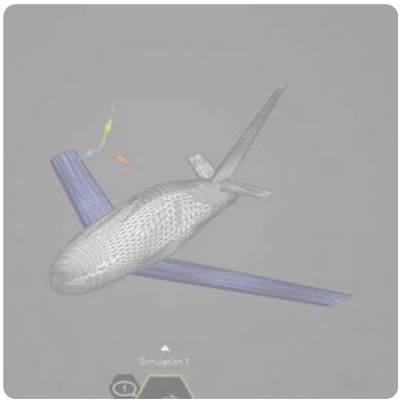
CWRU

2024

Aerospace and Mechanical Engineer

Template: HTML5 UP

controlled loads, reducing assembly and quality control times. Moreover this setup enabled the study of resonant frequencies and mechanical losses as a function of speed, giving a more accurate and precise model of estimating efficiencies in the engines.

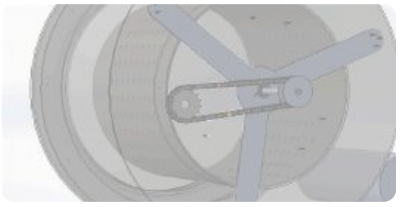


Preliminary CFD simulations

CFD simulations for rapid product development (RPD) techniques such as preliminary design reviews (PDR). In this example I used a CFD simulation of a prototype airpllane to find possible sources of turbulent flow and estimate the drag force at cruise conditions. As part of my own research for "Aerospace Design", a senior-level class.

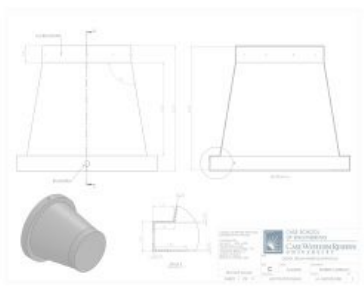
Extract from concept of

classwork. In this example I estimated the surface teperature of a 1800 CC custom V-twin engine under natural convection.



Washing machine concept for less developed countries

Team project oriented to design a device on Solidworks with a social purpose. I was the project leader in charge of manufacturing decisions, gear power system, CAD assembly. Full Presentation.



Technical drawing example

Polyethylene blowmold for drum of washing machine, secured by

operations

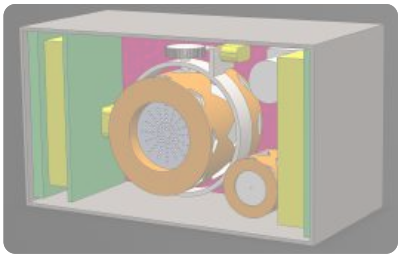
water-tight rivets to the metal skeleton of the washing machine, integrating different material components into a single feasible proof-of-concept.

Rober Carrillo

CWRU

2024

Aerospace and Mechanical Engineer

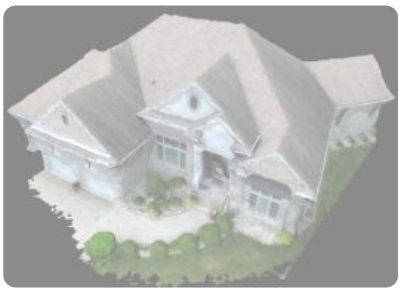


Mock Mission proposal for program L'Space Summer 2021

I lead propulsion research and CAD design, researched trajectories, COO (concept of operations) and observation instruments. I also designed 3D model of the BIT-3 ion propulsion engine based on manufacturer's information. Full Team Mission Proposal.

National Rocketry Association Level 1 Certification Rocket

In 2021, I designed, simulated, manufactured, and launched a personal rocket that reached 2400 feet.



3D visualization of homes for Accurate Solar System Designs

During my time at Monalee, I worked with the Software Engineering team and delievered a step-by-step process for taking high quality images with drones and turning them into 3D accurate visualizations of homes for their marketing gigs and automated

Template: HTML5 UP

solar system design project,
unique in the solar system design
busines.

Example of libraries used in Python Colab:

```
numpy
matplotlib.pyplot
google.colab
CoolProp.CoolProp
pandas
mpl_toolkits.mplot3d
```

Rober Carrillo

CWRU

2024

Aerospace and Mechanical Engineer

In this project I used the open-source alternative "Coolprop" to find properties of CO2 through different stages in a geothermal generatic system, as part of my senior level coursework. Full Google Colab file

Resume

Get In Touch

Based in Cleveland, OH

216-418-6153

robercarrillog@gmail.com

Template: HTML5 UP

Rober Carrillo

CWRU

2024

Aerospace and Mechanical Engineer

Template: HTML5 UP

Rober Carrillo
BSE Aerospace & Mechanical Engineering | CWRU | Davis Scholar

Licenses & certifications

Modern Robotics: Mechanics, Planning, and Control Specialization (In Progress)
New York University
Issued Feb 2025
Show credential

Skills: Printed Circuit Board (PCB) Design · C++ · Robotics · Electrical Controls

SOLIDWORKS: Simulation for Finite Element Analysis
LinkedIn
Issued Jan 2023
Show credential

Skills: 3D Modeling Software · 3D Modeling · Computer-Aided Design (CAD) · Design

High Power Rocketry certification level 1
NATIONAL ASSOCIATION OF ROCKETRY
Issued Oct 2021

Skills: 3D Modeling Software · 3D Modeling

Computer Vision Basics
Coursera
Issued Jun 2020
Credential ID X5NYWKXXG35G
Show credential

Skills: Spatial Data · Computer Vision

Neural Networks and Deep Learning
Coursera
Issued Aug 2019
Credential ID G2T3RE6AG3EG
Show credential

Skills: Spatial Data · Computer Vision

Rober Carrillo
BSE Aerospace & Mechanical Engineering | CWRU | Davis Scholar

Education

Case Western Reserve University

Bachelor of Science - BS, Aerospace, Aeronautical and Astronautical Engineering
May 2020 - Dec 2024

• Dual engineering degree in Mechanical and Aerospace Engineering.
• Davis Scholar.
• Chair of Partnerships and Relations in the chapter of the Society of Hispanic Professional Engineers.
• Member of Humanitarian Design Corps, local team, participated in the installation of solar panels.
• Member of Case Rocket Team. Participated and helped fellow students in getting their rocketry certifications.

Skills: Design · 3D Modeling Software · 3D Modeling · Metal Fabrication

Arizona State University

Research at NASA's L'SPACE mission concept academy.
May 2021 - Aug 2021

Activities and societies: Leading propulsion systems research.

• Team project oriented towards a comprehensive mission proposal to evaluate the presence and accessibility of water on the lunar surface down to 1 meter in depth.
• Compared the efficiency and limitations of different propulsion systems for our specific mission to carry a small spacecraft and proposed the best option within the given constraints.
• Earned valuable experience in Siemens NX, Gantt charts, project management, budgeting, and writing technical reports.

Skills: Design · 3D Modeling Software · 3D Modeling · Teamwork · Computer-Aided Design (CAD)

Team13_StellarRemnants_WOLF_PDR.pdf

United World College Mostar

Aug 2016 - May 2018

• Leader of programming in Robotics Team, an active member of the Model of the United Nations, and the Biking Club.
• Leading member of the student-run team tutoring local students in a variety of scientific experiments.
• Humbled and thankful to have received a full-ride scholarship to study and represent my country in a two-year program at one of the 18 UWC international boarding schools.
• Earned the IB diploma with a focus on STEM classes, representing my boarding school in a national computing competition, and with a graduating project applying Machine Learning to the process of college selection.

Semester At Sea / ISE

2018 - 2018

• Full ride scholarship to study Environmental Economics and Geology in a semester-long program onboard a ship, analyzing theoretical knowledge in situ.
• Studied emergent challenges, opportunities, and solutions to problems arising from the inclusion of environmental protection into the economy. Covered topics such as renewable energies, the United Nations' REDD and Cap and Trade programs.

Save was successful. Your profile will be updated shortly.

Recommendations

Henry Remington

- As Rober's manager during his internship at LAND Energy, I was consistently impressed by his technical prowess and professional growth. Rober exceeded expectations when I tasked him with leading a project to model our electric motorcycles' performance and efficiency, delivering results that significantly enhanced our mechanical constraints and customer communications and understanding.
  I witnessed his exceptional problem-solving abilities firsthand when he designed and implemented a real-time data logging system for our test bikes, using hand calculations, python, and Arduinos.
  What particularly stood out from a management perspective was Rober's cost-saving innovation—his motorcycle dynamometer prototype saved our department over $150,000 while meeting all performance requirements.
  Rober required minimal supervision while consistently meeting deadlines and quality benchmarks. His ability to collaborate across engineering disciplines made him an invaluable team member. As his manager, I can confidently recommend Rober for any engineering role requiring technical excellence and leadership potential.