



# RESEARCH FOUNDATION



## Robotics Project

**\$8,640 Internship  
Summer 2024**

**Searching for Two Interns:**

- One Mechanical Engineering
- One Software/Computer Science

**Apply by April 21<sup>st</sup>**

## **\$8,640 Applied Internship Opportunity**

### **Attention: Undergraduate and Graduate students**

Apply to be part of a 2-member student team for a Summer 2024 internship (480 hours). Earn \$8,640 per student (\$18/hour) while gaining real-world, applied problem-solving experience.

**Project Overview:** Develop, build, and code a robot capable of 3D scanning livestock to estimate their weight without causing distress.

#### **Mechanical Engineering Intern Assignment:**

1. Research and Expert Consultation: The intern will research & consult with experts to understand the requirements for a robot platform that can non-intrusively 3D scan cattle.
2. Design and Planning: The intern will design an all-terrain robot platform that includes
  - A design that minimizes livestock disturbance
  - The capability to navigate challenging terrains
  - A top-mounted gimbal for camera stability
3. Implementation: The intern will construct the design using 3D printing and CAD software.
4. Analysis and Reporting: The intern will prepare a report evaluating the project's feasibility, successes, and areas for improvement, including: Assessing the method's feasibility for livestock weight estimation, identifying successful and developing project aspects, proposing improvements, and summarizing lessons learned.

#### **Software/Computer Science Intern Assignment:**

1. Research and Expert Consultation: The intern will research & consult with in fields such as computer vision, agricultural technology, and robotics
2. Design and Planning: The intern will be responsible for the development of both the hardware and software components of the robot, including:
  - Designing a system to capture a 3D model of livestock
  - Developing algorithms to determine the volume of the cow from the 3D model
  - Hardware-software integration planning for a robot-mounted camera system
3. Implementation: Implement software solutions, including the development of the 3D scanning process, volume calculation algorithms, and the integration with the camera system. Intern will be involved in testing and refining solutions to ensure accuracy and reliability. This includes hands-on work with software development tools, programming languages, and testing methodologies.
4. Analysis and Reporting: Compile a detailed report evaluating the technical feasibility, effectiveness, & improvement areas, covering: the accuracy and reliability of the 3D scanning and volume estimation methods, insights on camera system performance and software integration, recommendations for future enhancements and a summary of lessons learned.

## **\$8,640 Applied Internship Opportunity**

### **Attention: Undergraduate and Graduate students**

**Internship Location:** Laramie, WY

**Project Duration:** May 13, 2024 – August 23, 2024 (32 hours/week for 15 weeks, flexible)

**Who is eligible?** All currently enrolled Wyoming-based undergraduate or graduate students.

#### **How to Apply:**

Submit the following to [paulb@9hfoundation.org](mailto:paulb@9hfoundation.org) : **Application Deadline:** April 21, 2024

- Cover letter, expressing why you are interested in this opportunity & your qualifications (coursework, training, experience)
- Current resume, including GPA

**Student Pay:** \$18/hour – a maximum of 480 hours. There is some schedule flexibility.

#### **Mentorship:**

The interns will be integrated into a team, briefed on their goals, and introduced to the significance of their project in enhancing livestock management practices. They will spend the initial phase researching and planning their approach, supported by experts from various fields such as coding, robotics, engineering, and ranch management. This multidisciplinary mentorship aims to prepare the intern for a comprehensive project execution—from conception through implementation.

A significant emphasis will be placed on the documentation of the project process and the formulation of a detailed final report. This report is intended to assess the feasibility of 3D scanning technology in livestock weight estimation, serving as a valuable resource for the agricultural community. By detailing the project's outcomes, challenges, and lessons learned, it aims to inspire and guide ranchers in adopting innovative technologies to modernize their operations.

The success of the internship is measured not by the immediate product, but by the depth of understanding and the potential application of the findings in real-world scenarios.

#### **9H Ranch Partnership:**

The 9H Ranch is an operating agricultural operation, with more than 50,000 acres in Wyoming. Producing hay, alfalfa, corn, and cattle, they have agreed to allow students unfettered access to the land for their projects. The 9H Ranch manager will be a source of knowledge, guiding the interns in what is needed for successful ranching operations and how technology can help their endeavors.

#### **UplinkRobotics Partnership:**

Wyoming Tech Startup UplinkRobotics will be offering mentorship and guidance to the interns in this internship in the form of knowledge, tools, guidance, workspace, etc. Their experience will help the interns bring robotics to ranchers.



## About 9H Research Foundation



The [9H Research Foundation's](#) goal is to prepare students for a fulfilling career by funding real-world practical projects, scholarships, internships, awards, competitions, & prototypes.

In addition to a traditional education, 9H gives students the opportunity to work on applied projects with real-world value. This is the best way to achieve our goal of preparing students for a competitive career. Since 2020, the 9H Foundation and its founder have contributed nearly \$2M dollars towards student internships, scholarships, competitions, and project funding.

As a hub for innovation, the 9H Foundation engages students with paid practical projects & internships that elevate their professional marketability & bolster their skills.

With student input through senior design projects & energy competitions, the 9H Research Foundation has built a [500kW, 5-acre solar research facility](#) for the benefit of UW; the power sold from the 30-year life of the solar farm will directly fund UW students.

"The 9H Research Foundation projects represent an amazing opportunity for students from the University to be closely involved in applied projects & engineering competitions"

Cameron Wright  
Dean of Engineering &  
Physical Sciences



**With support from**  
**[www.uplinkrobotics.com](http://www.uplinkrobotics.com)**



**[www.9Hfoundation.org](http://www.9Hfoundation.org)**

If you would like to learn more about 9H Research  
Foundation, we'd love to talk with you.

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