



# DeepVision Sonar Mount



## OBJECTIVE

The Naval Information Warfare Center (NIWC) requires an operable sonar imaging sensor to be mounted to the developmental test platform - Green Uncrewed Surface Vessel (GUS-V), as well as the development of a machine learning vision algorithm to classify underwater objects using raw sonar data.

## THE TEAM

Thomas Kenton  
Ethan McCaffrey  
Joseph Morales  
Emilee Smith  
Sponsor: NIWC Pacific

## SOFTWARE

1. Robot Operating System 2 (ROS2)
2. Allows for communicative C++ & Python Script Execution
3. Ideal for multiple Sensors and Components
4. Allows for full remote or autonomous control of Sonar & Linear Actuator
5. You Only Look Once (YOLO) V9
6. Open Source Vision Algorithm for Object Detection and Identification
7. Used 10,000+ Manually Labeled Images to Train Model using RoboFlow
8. Identifies Circles, Squares, Triangles
9. PyTorch for image library

## MECHANICAL DESIGN

1. Aluminum Construction
2. 12V Linear Actuator
3. T-slot Aluminum Frame
4. Water Cut Aluminum Custom Parts
5. CNC Machined Clevis and Bearings



## ELECTRICAL DESIGN

1. Custom PCB for Sonar & Linear Actuator Control
2. Two IP68 Water Resistant Bulkhead connectors
3. 12V & 48V Power Supply (Actuator & Sonar Respectively)
4. Controlled with Nvidia Jetson GPIO Pins

