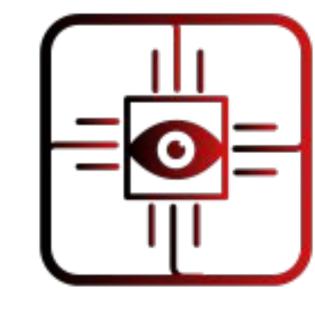




USMC SMALL GROUND SENSOR

Team Argus

Problem Statement



Argus

System Level Diagram

Cable 234

RF-0300-A-1

Top Housing Part

Main O-Ring Seal

Front Side View

Adafruit GPS

Breakout

Integrated Circuit Board

Battery Management System

Back Side View

18-8 Hex Drive

18-8 Screw Insert

Spacer

RX TXRX

Transeiver

3.6V Lithium Ion Battery

Keystone 1042 Battery

Keystone 1042 Battery

3.6V Lithium Ion Battery

Left Side View

Acrylic Window

Window

O-Ring

Acrylic

EIGHT M2x0.4mm

Thread 5mm Long

Screws

Camera Mount

Arducam 2MP

Mini Camera

Hex Drive, M3x0.5mm

Thread, 4mm Long

Screws

PIR Sensor

Mount

HiLetgo PIR

Infrared Sensor

M2X0.4mm Thread, 5

mm Long Screws



18-8 Hex Drive

18-8 Screw Inserts

Microphon

Bracket

Electric

Microphone

Waterproo

M2X0.4mm Thread, 5

mm Long Screws

VIEW ANGLE

ELECTRONICS

HOUSING

MOUNTED

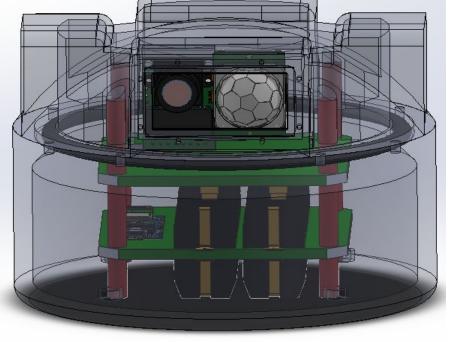
VIEW SIDE

Design and build a small ground sensor for the United States Marine Corp 1st Battalion that is capable of covertly monitoring remote areas in real-time with wireless user accessibility. Marines require a networkable, lightweight, disposable and user-friendly device that is capable of monitoring an evolving battlespace. These ground sensors shall be dispersed by hand along key locations to detect possible adversaries by methods of acoustics, visuals and motion. This device shall provide key information to the user to aid in their decision-making.

Prototype



Isometric View



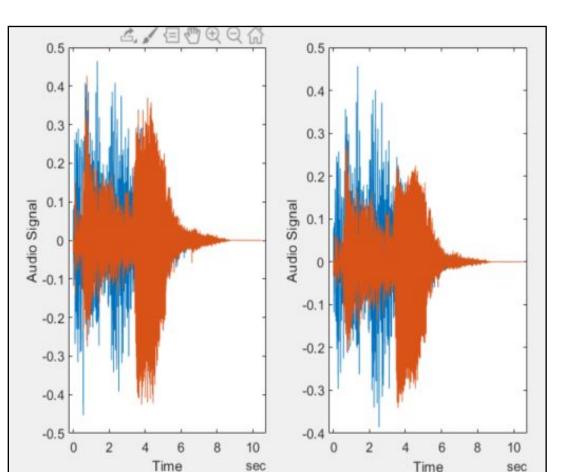
Internal Components

3D CAD Design

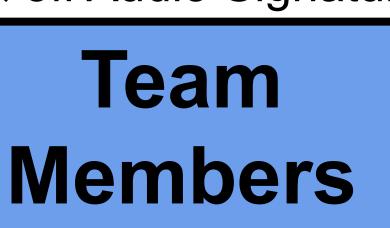


Testing

Below are two pictures of early testing of the subsystems. Team Argus wanted to confirm that the camera and microphone were the proper choices to meet the requirements stated in the problem statement.



Car Engine Turning on & off Audio Signature



in Daylight

Team Lead

Henry Segura

Camera Trial

Koa Cabling Design Engr.

Housing Material: PC-ABS Blend

Size: 6.5in X 4.5in IP rating: IP65 Weight: 1.5 lbs Subsystems: Microphone, 2MP Camera, PIR Sensor, GPS Battery life: up to 7 days Communication: This sensor follows a breadcrumbing approach to monitoring a large amount of area with wifi capabilities to alert and relay



Nicholas Balagtas Joshua Barnard Test Engr. Manufacturing Engr. Systems Engr.



Raylan Gonzales

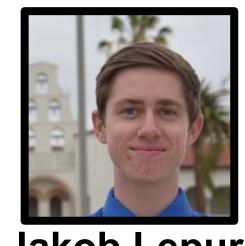
Electrical Engr.

Paul Guiriba Computer Engr.

Donnel Endaya

Electrical Engr.

Bottom Housing Part



Arduino Nano 33

3.6V Lithium Ion Battery

Keystone 1042 Battery

Keystone 1042 Battery

3.6V Lithium Ion Battery

Jakob Lepur Computer Engr.

Spring 2021

Design Specification

information back to the user.