



# Project Report - “Thermo Drone”

Prepared for: National Science Fair 2023 - The Hyderabad Public School,  
Begumpet

Prepared by: Aryaman Aisola, 8

11 January 2023

Phone Number: +91 95811 46777

Email: [st7662@hpsbegumpet.org.in](mailto:st7662@hpsbegumpet.org.in)

---

# SUMMARY

The "Thermo Drone" project consists of a drone fitted with an IR [Infrared] module to detect temperatures. This module can detect the heat radiated by the human body or that of any living creature. The combination of this technology with a drone has limitless applications.

## Working

### Drone:

The drone runs on the ArduCopter APM 2.8 Flight Controller with an external M8N GPS Module with a compass.

- Payload Capacity ~ 200gms[approx.]
- Battery - 2200 mAh
- ESC SimonK 30A; Motors - 2200KV
- 450F Frame with FS-CT6B Receiver and Transmitter

### Application:

- Made using MIT App Inventor. Uses bluetooth technology to receive information from the Arduino and display it on the mobile phone.

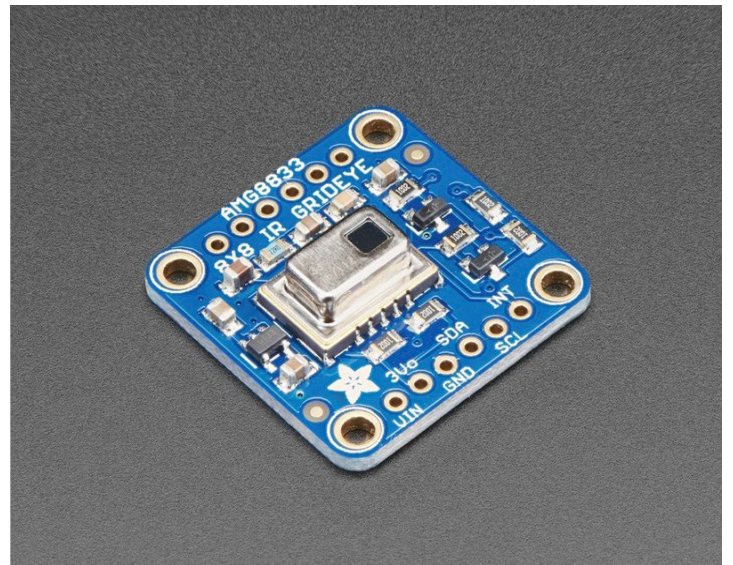
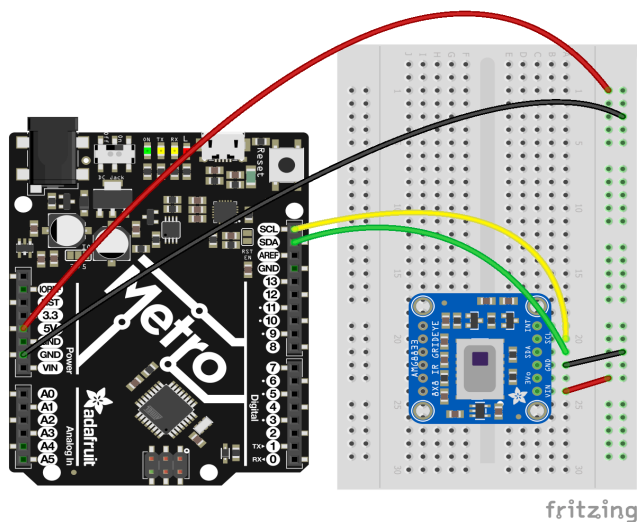
### Thermal Sensor:

The Sensor uses the AMG8833 IR Module for heat detection. This is interfaced with an Arduino UNO for the logic.

- The sensors outputs a matrix of pixel data to the Arduino
  - The Arduino then uses a program to check if the average value of the pixel data is within the range of normal human body temperature
  - If the conditions are met, the Ultrasonic Sensor detects the distance to the human.
  - A signal is sent to the Mobile Application using a HC-05 Bluetooth transceiver.
  - Power Source - Power Bank
-

- Range of detection ~ 30cm[approx.]

The Circuit Diagram is given below:



# APPLICATIONS

- After natural disasters, such as tornadoes, hurricanes, earthquakes, etc, it can be used to detect people stuck under debris and save their lives. Traditionally, this would take a lot of time and manual work, but, with this technology, it is time and resource efficient
  - Agriculture drones – which are used for irrigation, sowing of seeds, etc – can have this feature in them to detect cattle or other animals straying onto the farm and notify the farmer
  - This technology has limitless other applications, such as:
    - Surveillance
    - Fire detection
    - Healthcare [Contactless Temperature Sensing, etc.]
    - Solar panel inspection
    - Search and rescue
    - Power engineering and nuclear plants
    - Navigation, etc
-

This project can be improved upon in many ways, such as:

- Using a better thermal camera [IR Sensor]
- Using a better bluetooth module for greater range of communication
- Improving the drone with a better battery, motors, ESCs, and Transmitter
- Integrating AI to differentiate between humans, animals and other objects, etc