Fire - Fighter Drone

Team Members

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The Inspiration

That inspired us to work on this project

There has been a rise in the amount of environmental crisis that occur every year.

Over the past few years, fire accidents has become a very common threat, increasing the number of burn injuries and death tolls.

The fire department has done a great job in keeping the trend static and decreasing it. However, a few more additions can be made to make their job easier.

Fire accidents happen in a matter of seconds. Each second is important to save life caught in a fire accident. Our main aim is to make their work more efficient using drones.

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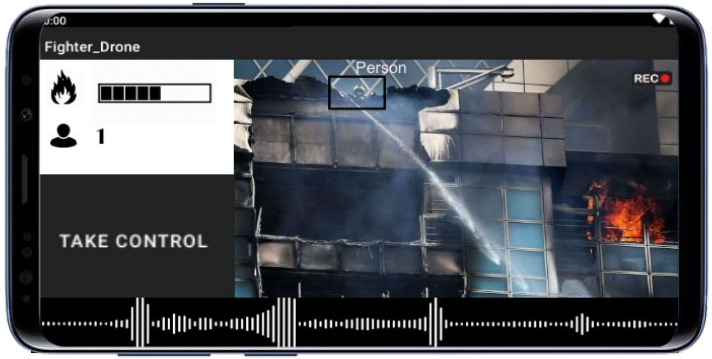
The Design

That helps combine AI with Fire Fighting

Drones when equipped with object detection algorithm in addition to thermal cameras and temperature sensors will save a huge deal of time.

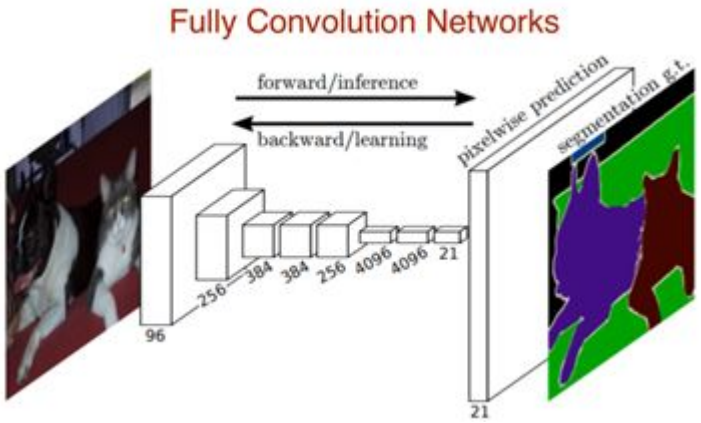
The camera detects the number of people trapped in a particular location, detects the temperature and sends the info directly to the fire dept.

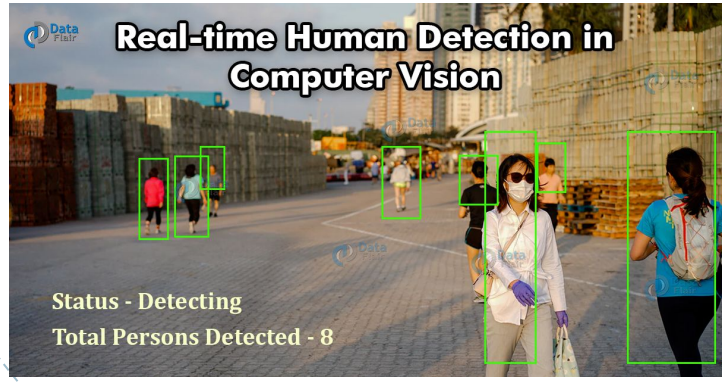

0:00
Fighter_Drone
0
REC
TAKE CONTROL



Connect Mobile with Drone controller for
Manual Control

Object Detection





Algorithms

YOLO-v4
RCNN
Seg-Net
U-Net

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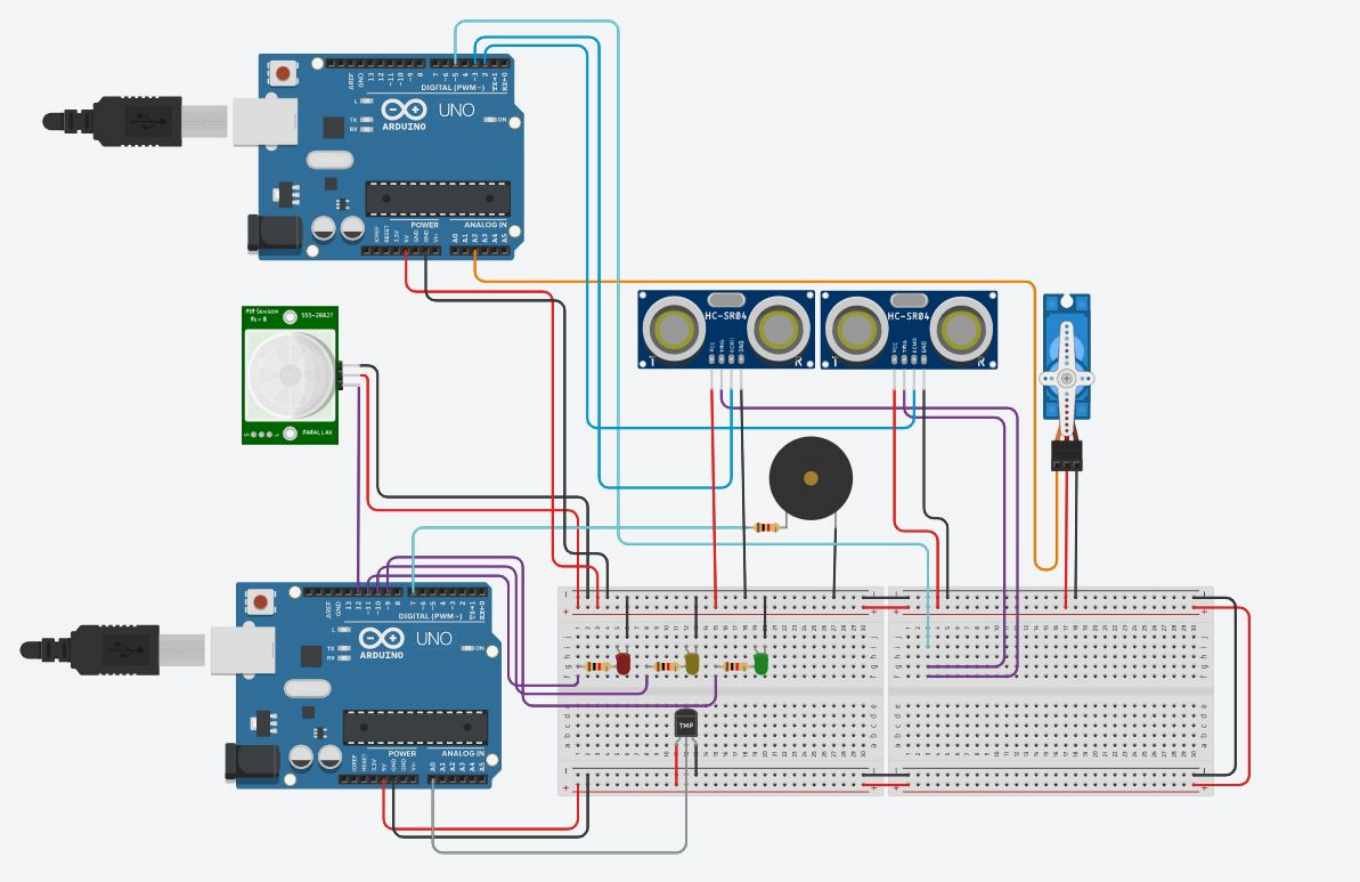
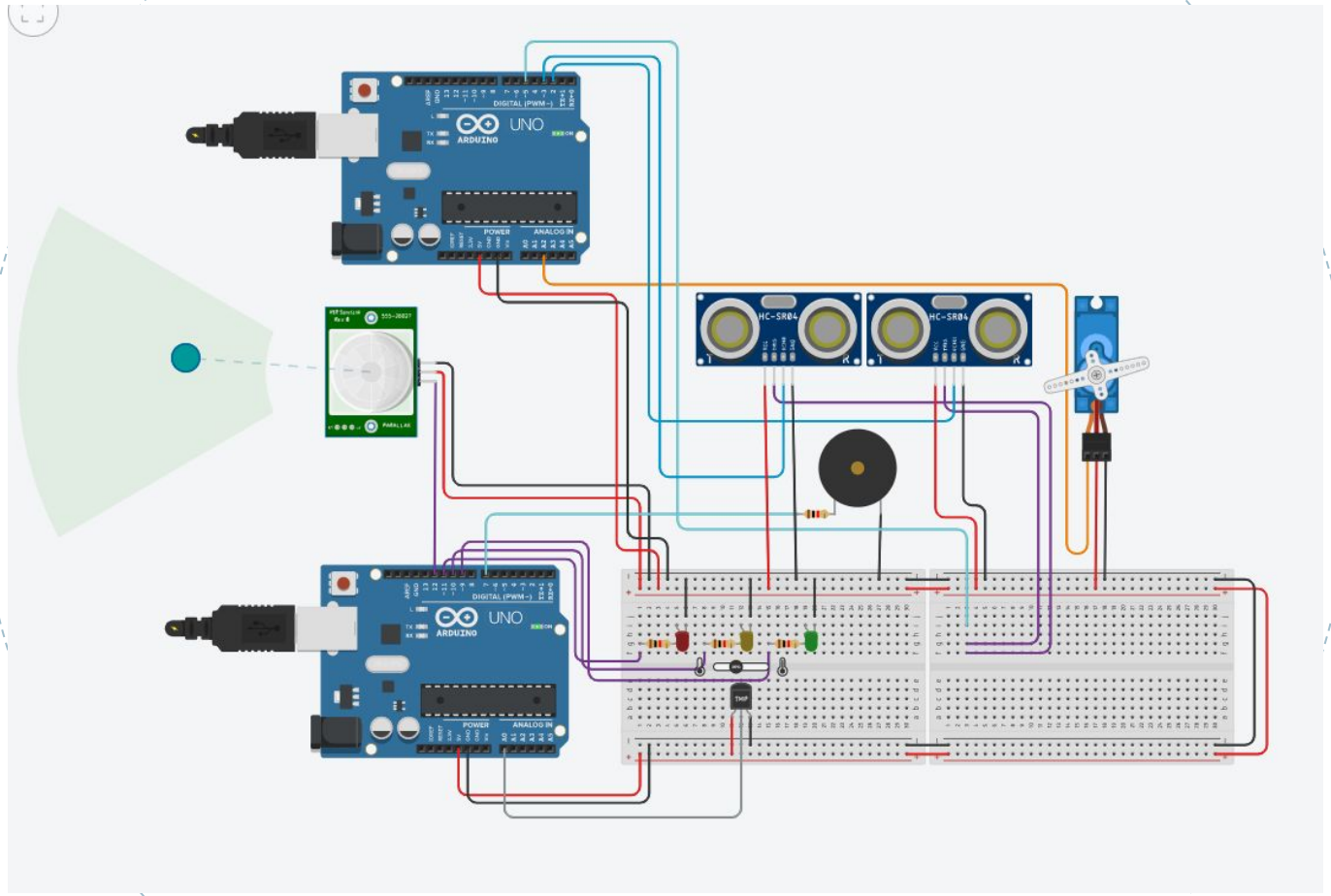
Implementation of the Idea

Putting it to work


UNO
ARDUINO
HC-SR04
HC-SR04
TMP


UNO
ARDUINO
HC-SR04
HC-SR04
UNO
ARDUINO

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The Code

Simulating the Implemented Work

```
#include <Servo.h>
int trigPin = 5;
int echoPin1 = 3;
int echoPin2 = 2;
long duration, cm1, cm2;
Servo myservo;
int pos = 0;

void setup()
{
    Serial.begin(9600);
    pinMode(trigPin, OUTPUT);
    pinMode(echoPin1, INPUT);
    pinMode(echoPin2, INPUT);
    myservo.attach(A2);
}
```

```
// Code for UltraSonic Sensor 1
digitalWrite(trigPin, LOW);
delayMicroseconds(5);
digitalWrite(trigPin, HIGH);
delayMicroseconds(10);
digitalWrite(trigPin, LOW);
pinMode(echoPin1, INPUT);
duration = pulseIn(echoPin1, HIGH);
cm1 = duration * 17050;
delay(100);
// Code for UltraSonic Sensor 2
digitalWrite(trigPin, LOW);
delayMicroseconds(5);
digitalWrite(trigPin, HIGH);
delayMicroseconds(10);
digitalWrite(trigPin, LOW);
pinMode(echoPin2, INPUT);
duration = pulseIn(echoPin2, HIGH);
cm2 = duration * 17050;
delay(100);
// Code for rotating the Servo Motor
for (pos = 0; pos <= 180; pos += 1) {
    myservo.write(pos);
    delay(10);
}
for (pos = 180; pos >= 0; pos -= 1) {
    myservo.write(pos);
    delay(10);
```

```
int piezoPin = 7;

int senseValue;
float voltage;
float temperature;

int pir = 12;
int pirState = LOW; // Initial PIR State
int val = 0; // Reads the pin status
int stor = 0; // Stores the pin gesture

void setup() {
    Serial.begin(9600);
    pinMode(piezoPin, OUTPUT);

    pinMode(9, OUTPUT);
    pinMode(10, OUTPUT);
    pinMode(11, OUTPUT);
    Serial.begin(9600);

    pinMode(pir, INPUT);
    Serial.begin(9600);
}
```

```
//Temperature Sensor
senseValue = analogRead(A0);
voltage = ((senseValue/1023.0)*5.0);
temperature = (voltage-0.5)*100;
Serial.print(temperature);
Serial.print(" degree Celcius");
Serial.println();
delay(100);

//LED Temperature Indication
if (temperature <=10 || temperature >=100) {
    digitalWrite(11, HIGH);
    delay(500);
    digitalWrite(11, LOW);
    delay(200);
}
else if (temperature >=50 && temperature <100) {
    digitalWrite(10, HIGH);
    delay(500);
    digitalWrite(10, LOW);
    delay(200);
}
else {
    digitalWrite(9, HIGH);
    delay(500);
    digitalWrite(9, LOW);
    delay(200);
```

```
//PIR Sensor Code for Gesture Control
// Code for varied buzz frequencies from buzzer
// in different conditions
val = digitalRead(pir);
if (val == LOW){
    Serial.print("Gesture 1 detected!");
    tone(piezoPin, 5000);
    delay(250);
    noTone(piezoPin);
    delay(250);
    Serial.print("\t"); Serial.print("Person is Safe!");
    Serial.println();
}

else if (val == HIGH){
    Serial.print("Gesture 2 detected!");
    tone(piezoPin, 1000);
    delay(250);
    noTone(piezoPin);
    delay(250);
    Serial.print("\t"); Serial.print("Person needs Medical Attent
    Serial.println();
}
```

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Future Scope and Improvements

Creating a better future

This Drone is a prototype model that can be improved a lot in the future.

It can be modified and fitted with different components according to the situation's need.

Not only for helping people in need but can also be programmed to assist people in their daily tasks.

THANK YOU