



Fire - Fighter Drone



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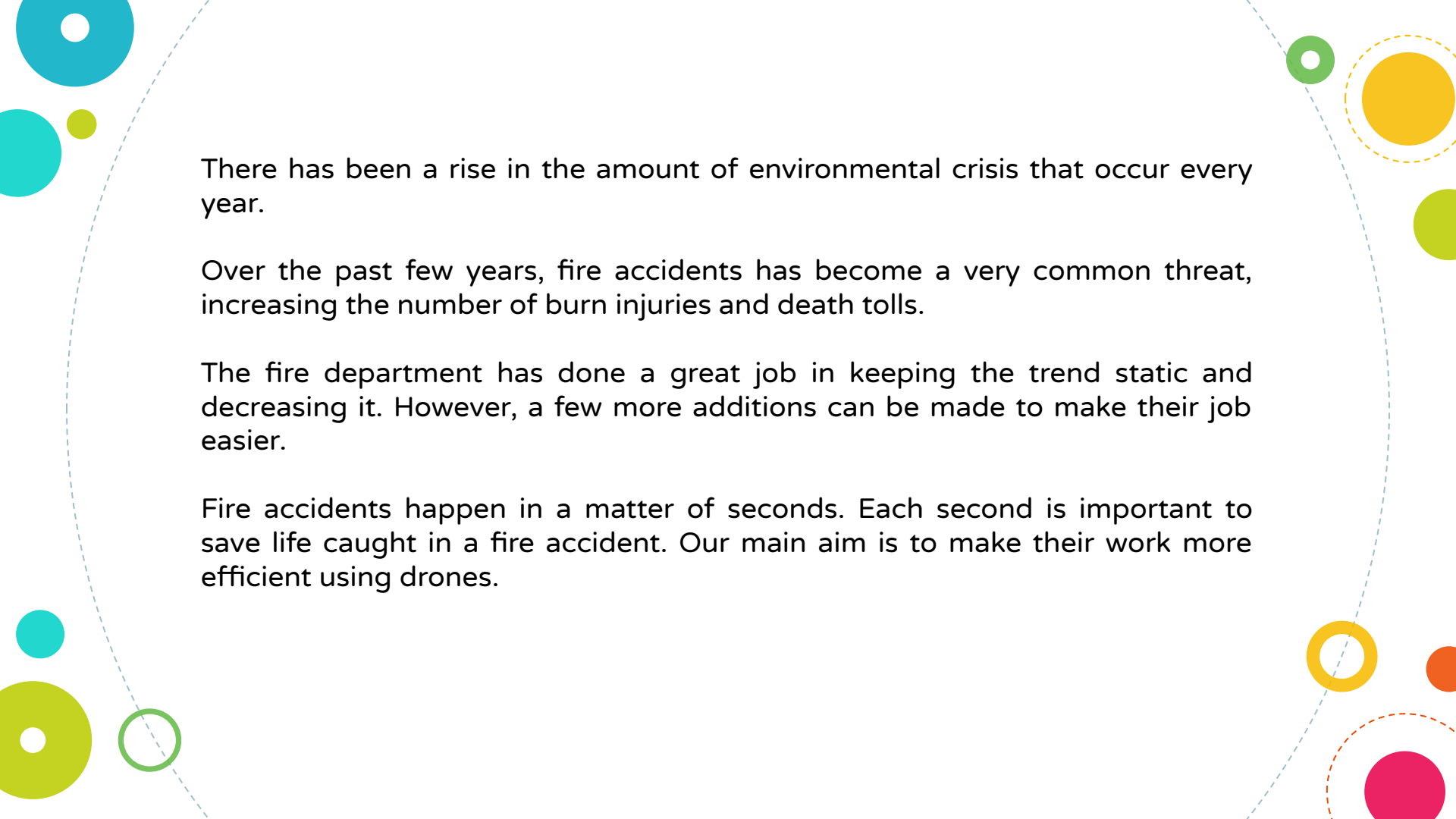


A decorative graphic featuring several overlapping circles in orange, yellow, green, and blue. Some circles have dashed outlines in matching colors. A large, light blue dashed circle is centered in the upper half of the page.

1

The Inspiration

That inspired us to work on this project

A decorative graphic featuring a light blue dashed line that curves from the top left to the bottom right. Various colored circles are scattered around this line: a large blue circle with a white center at the top left, a small yellow circle below it, a medium cyan circle to the left, a large green circle with a white center at the bottom left, and a small green circle with a white center above it. On the right side, there is a large yellow circle with a dashed outline, a solid green circle, a large orange circle with a white center, a small orange circle, and a large pink circle with a dashed outline at the bottom right.

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.

The background is white and decorated with various colorful circles and dashed lines. In the top left, there is a large orange circle with a dashed red outline, overlapping a yellow circle. Below them is a small pink circle. In the top right, there is a green circle with a white dot inside, and a yellow circle with a dashed green outline. In the bottom left, there is a green circle with a dashed green outline, and a large yellow circle. In the bottom right, there is a large blue circle with a white dot inside, and a small cyan circle with a dashed blue outline. A large, faint dashed blue circle is centered in the background.

2

The Design

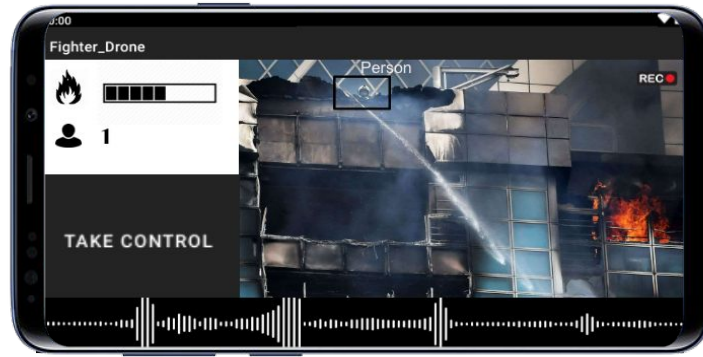
That helps combine AI with Fire Fighting



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.

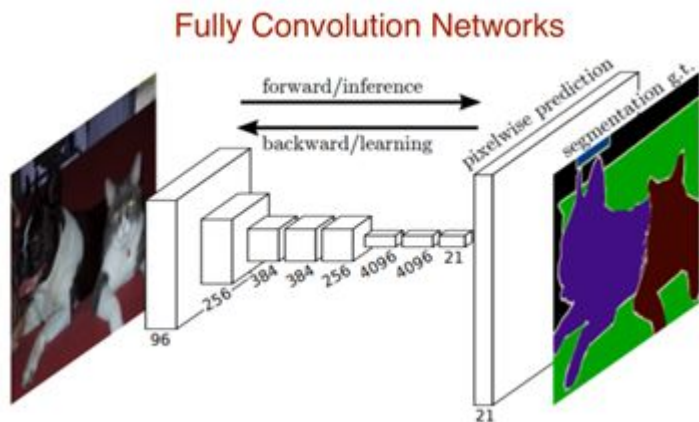




Connect Mobile with Drone controller for
Manual Control



Object Detection



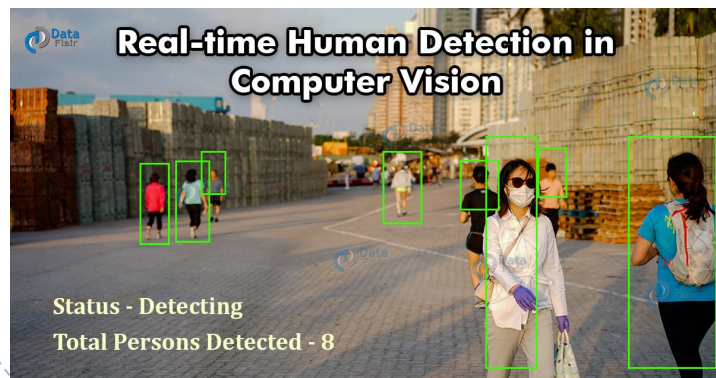
Algorithms

YOLO-v4

RCNN

Seg-Net

U-Net

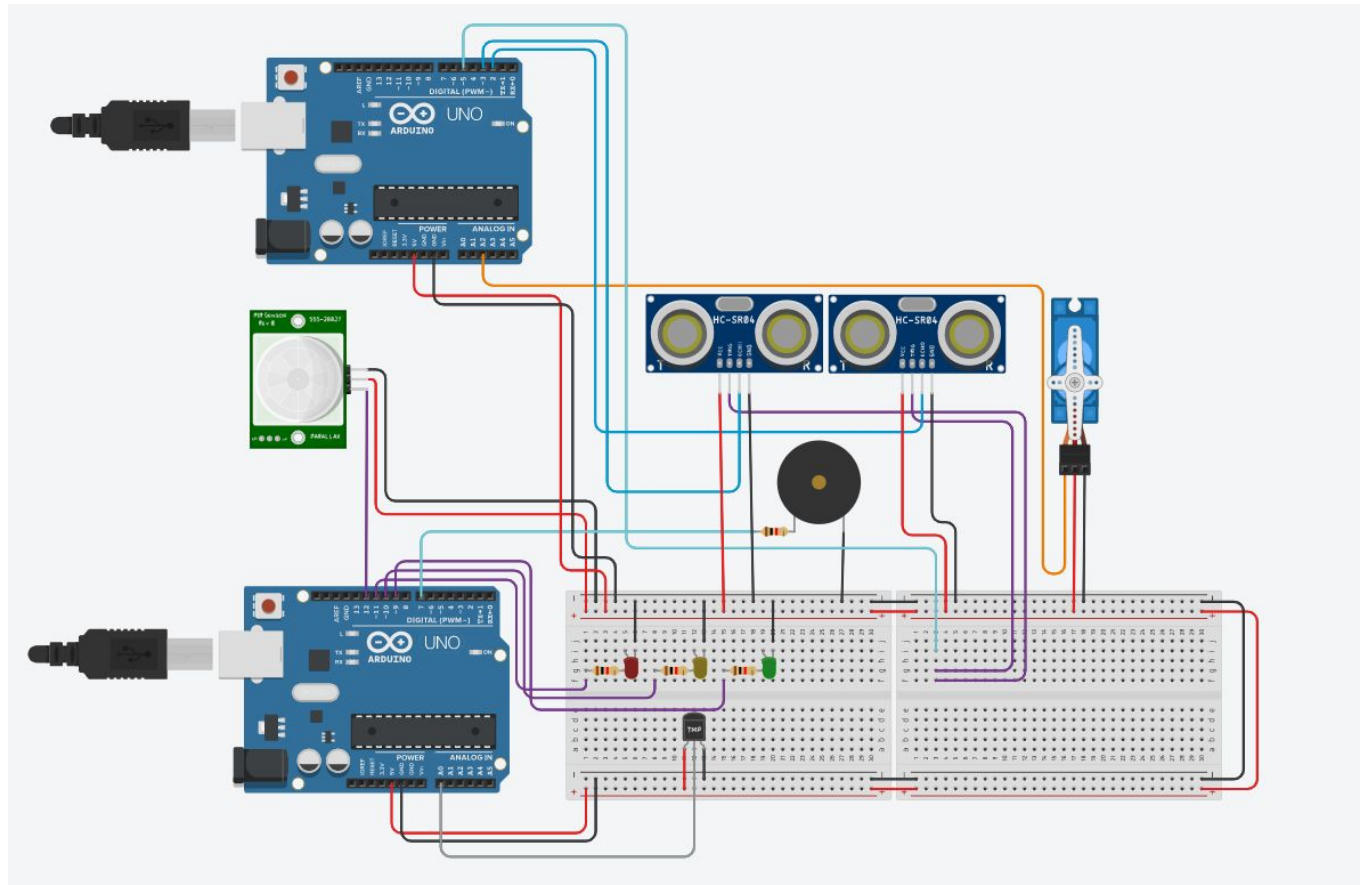


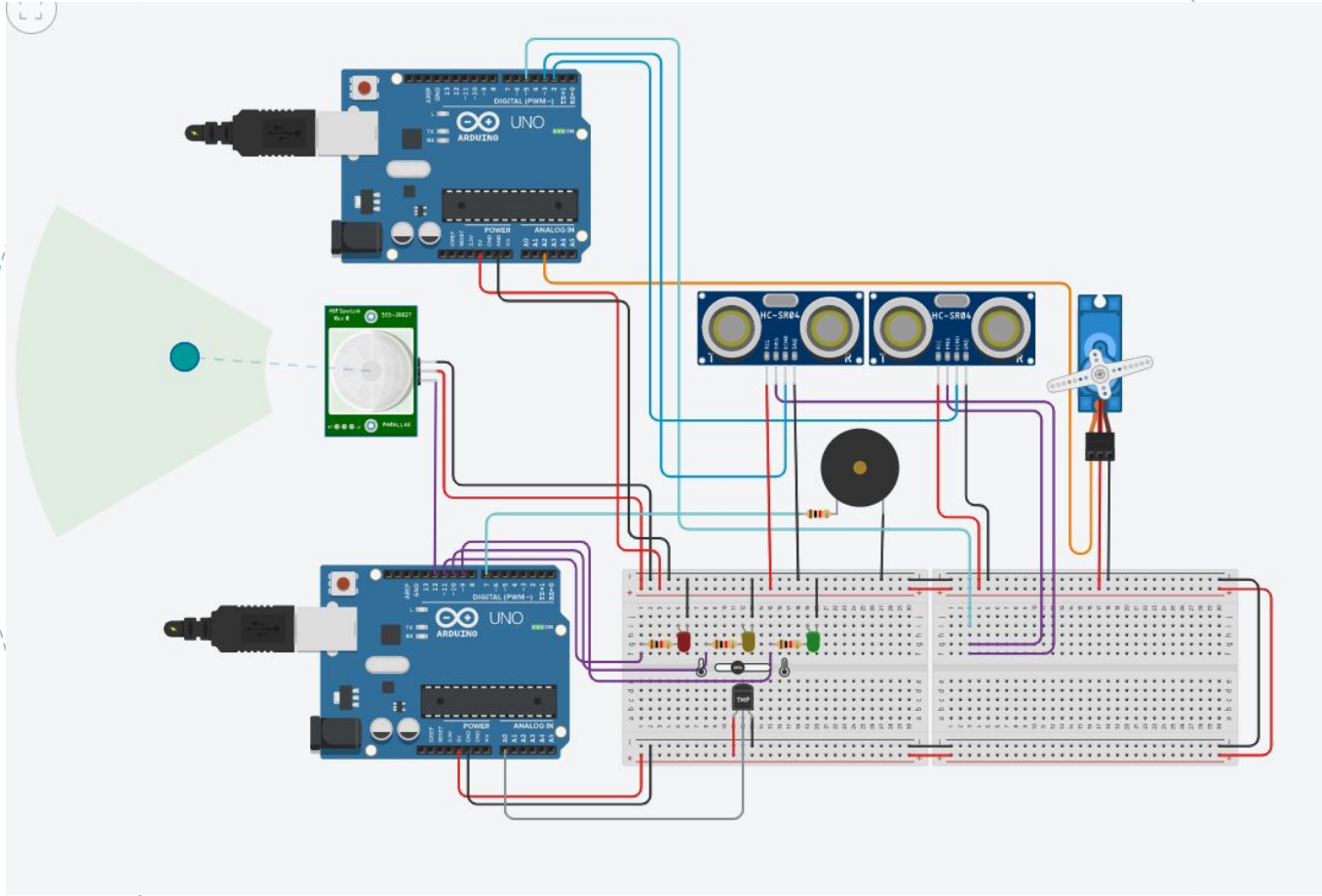
The background is white with various decorative elements: a large orange circle with a dashed red outline in the top left; a large yellow circle below it; a small pink circle below that; a large green circle with a dashed yellow outline in the top right; a small orange circle above it; a large blue circle with a dashed blue outline in the bottom right; a large green circle with a dashed green outline in the bottom left; a small cyan circle above it; and a large cyan circle with a dashed blue outline in the bottom right. A large, light blue dashed circle is centered in the upper half of the slide.

3

Implementation of the Idea

Putting it to work





The background is white and decorated with various geometric shapes. In the top left, there is a large orange circle with a dashed red outline, partially overlapping a solid yellow circle. Below the yellow circle is a small pink circle. In the top right, there is a green circle with a white center, a small orange circle, and a yellow circle with a dashed green outline. In the bottom left, there is a green circle with a dashed green outline, a large yellow circle, and a small cyan circle. In the bottom right, there is a large cyan circle with a white center, a small cyan circle with a dashed blue outline, and a small cyan circle. A large, light blue dashed circle is centered in the upper half of the slide.

4

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();
}

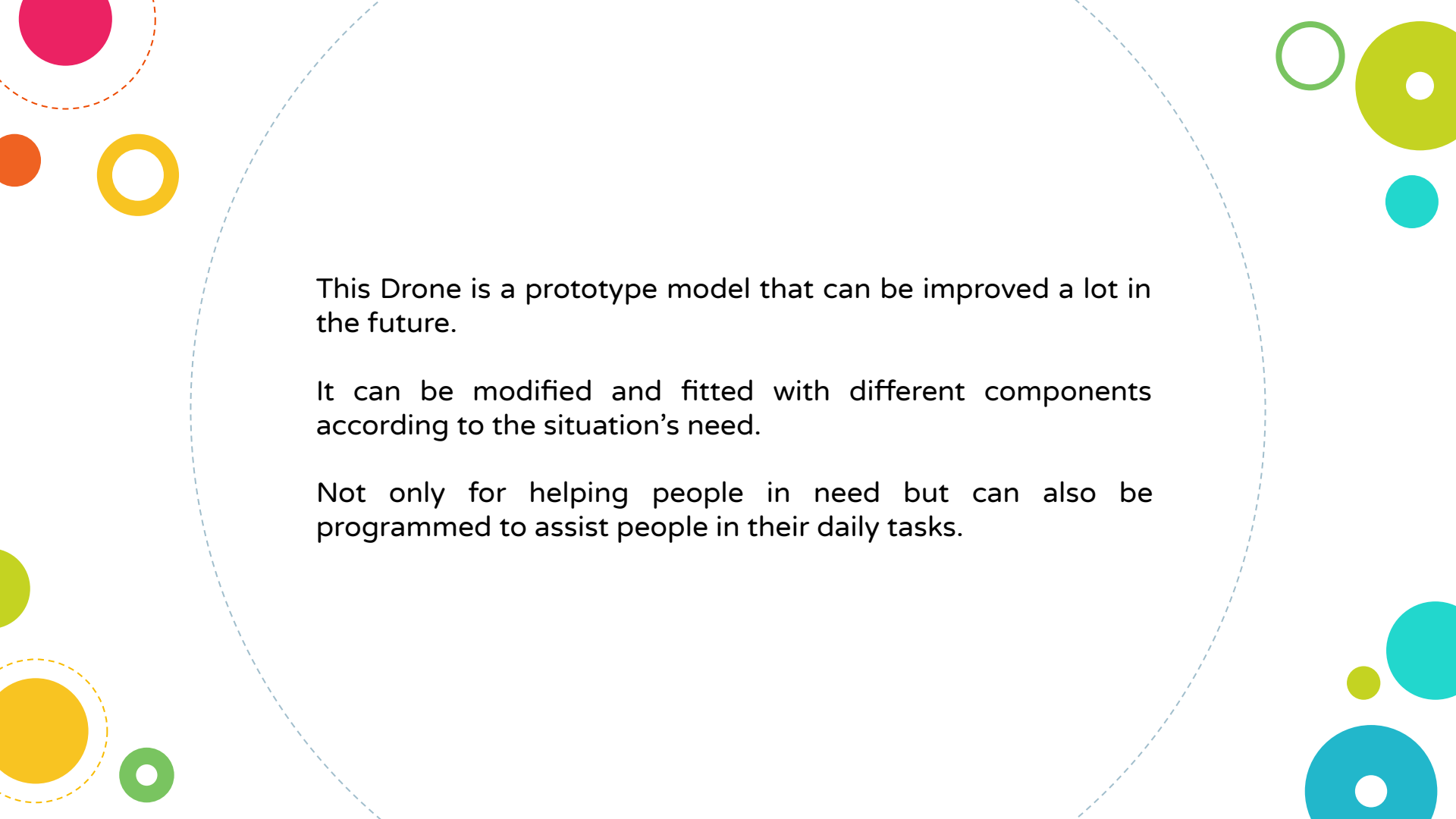
else if (val == HIGH){
    Serial.print("Gesture 2 detected!");
    tone(piezoPin, 1000);
    delay(250);
    noTone(piezoPin);
    delay(250);
    Serial.print("\t"); Serial.print("Person needs Medical Attent
    Serial.println();
}
```


A decorative graphic featuring several overlapping circles in orange, yellow, green, and blue. Some circles have dashed outlines in matching colors. A large, light blue dashed circle is centered in the upper half of the page.

5

Future Scope and Improvements

Creating a better future

The background features a large, light blue dashed circle centered on the slide. Surrounding this central circle are various smaller circles in different colors: pink, orange, yellow, green, and teal. Some of these circles are solid, while others are hollow or have dashed outlines. The overall design is clean and modern, with a focus on the central text.

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.

The image features a light gray background with a large, faint, dashed gray circle centered behind the text. In the four corners, there are clusters of colorful circles and rings. The top-left corner has a large blue circle with a white center, a medium cyan circle, and a small yellow-green circle. The top-right corner has a green circle with a white center, a large yellow circle with a dashed orange border, and a medium green circle. The bottom-left corner has a small cyan circle, a large yellow-green circle with a white center, and a green circle with a white center. The bottom-right corner has a yellow circle with a white center, a small orange circle, and a large pink circle with a dashed orange border.

THANK YOU