

DONE BY

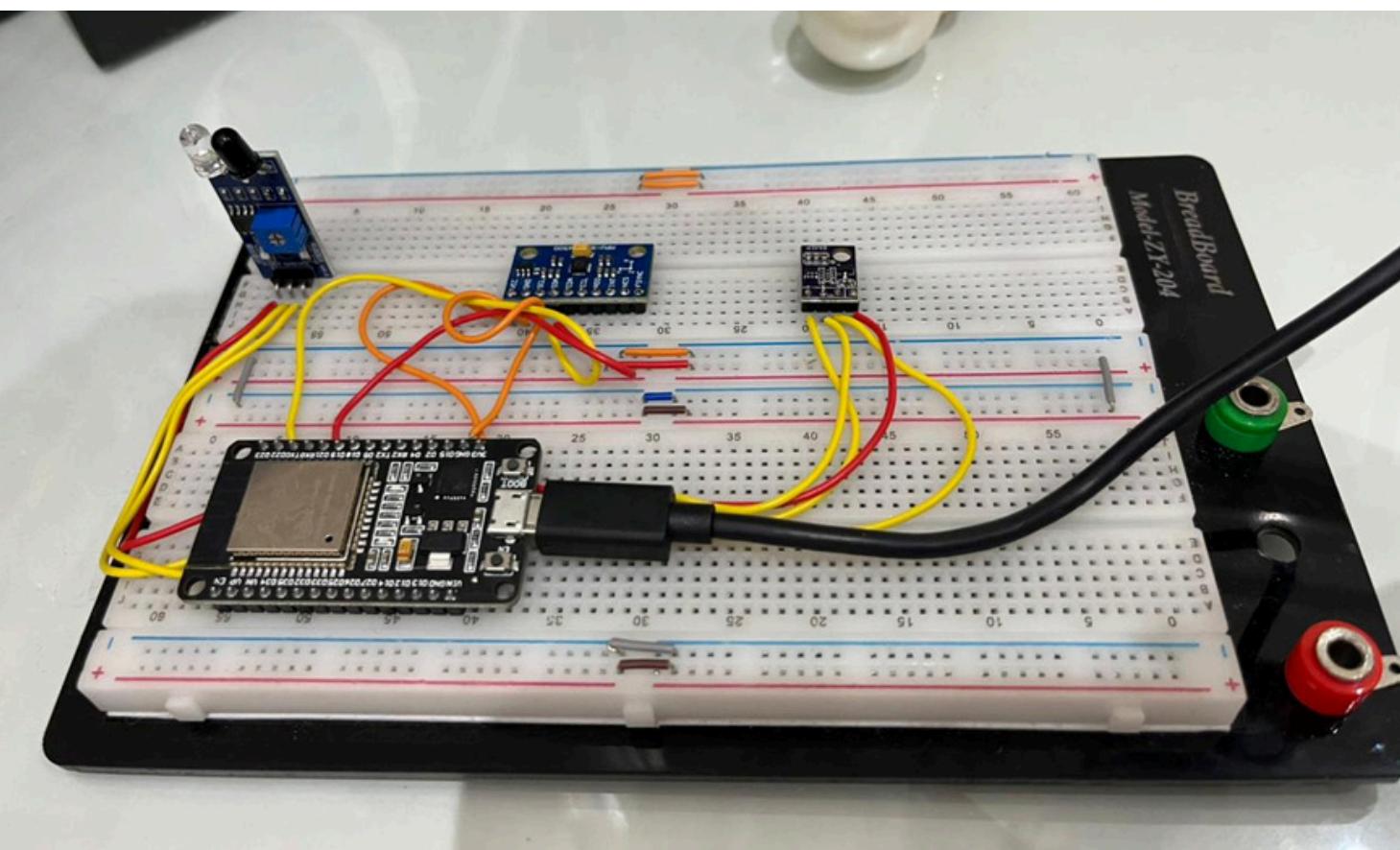
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Aircraft State Monitoring System

Advanced Networks Project

PRESENTED TO

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Proposed Model

Hardware Components

- ESP32 Microcontroller** – for Wi-Fi connectivity and data processing
- MPU6500 – 3-axis accelerometer and gyroscope** for motion/orientation
- BMP Sensor** – for altitude/pressure tracking
- IR Sensor** – for ground detection or obstacle sensing
- Breadboard and Jumpers**

Software Components

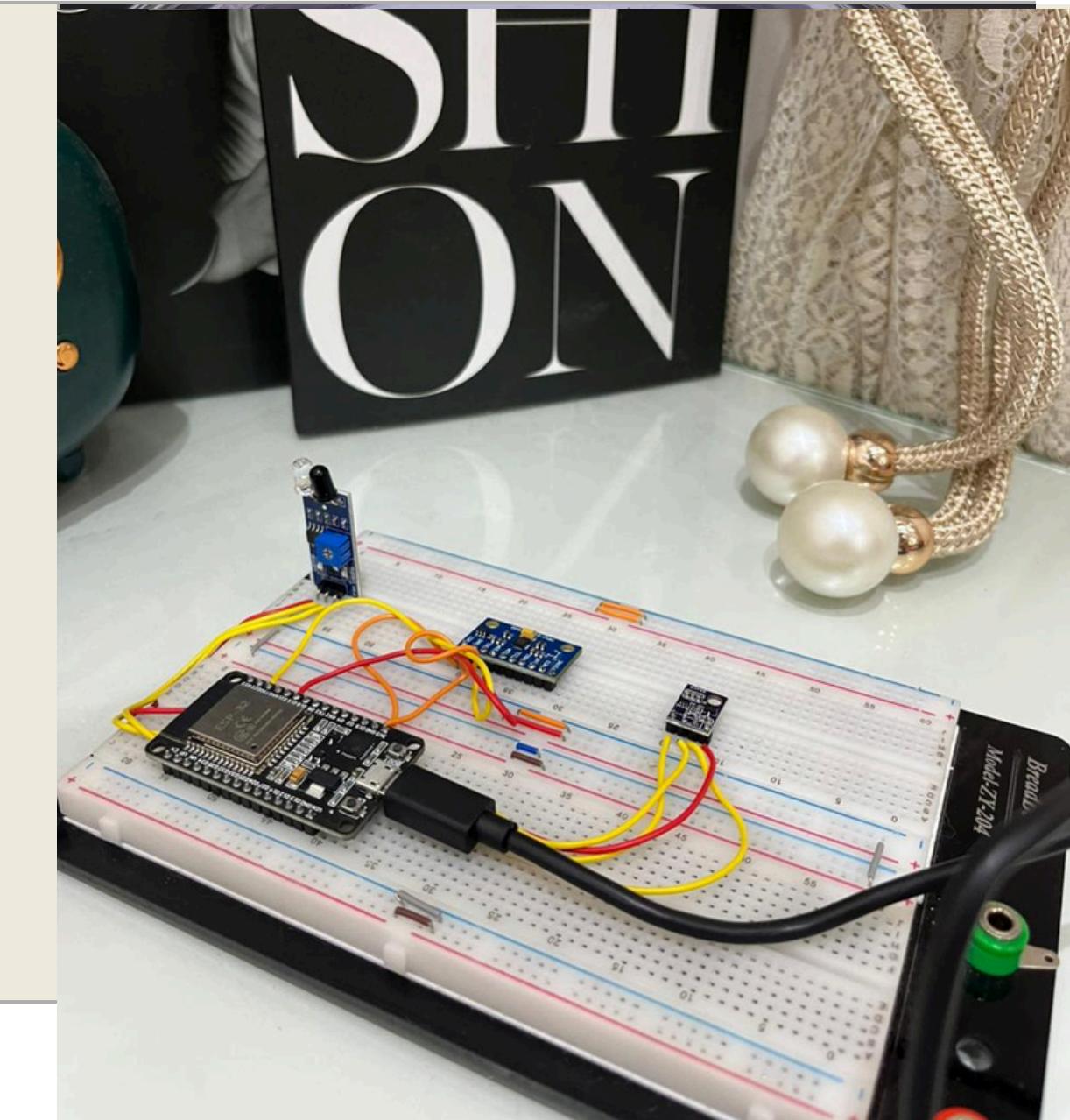
- Programmed using Arduino IDE
- Data transmitted using **MQTT** protocol
- Live dashboard built with **Blynk app**
- Optional alert system for abnormal states

Project Features

- Real-time aircraft state feedback
- Mobile monitoring from anywhere
- Live graphing and sensor logs
- Remote control capabilities
- Affordable and scalable design

Problem Statement

Modern aircraft need continuous monitoring of critical parameters like acceleration, orientation, pressure, and system status to ensure safety and detect anomalies early. However, existing systems are often complex, expensive, and limited in remote accessibility.



Goal

Build a lightweight, low-cost, real-time monitoring system that provides remote access to aircraft motion and environmental data via IoT protocols.

```
1 // Sensor objects
2 MPU6050 mpu;
3 Adafruit_BMP280 bmp; // I2C
4
5 // Timer
6 BlynkTimer timer;
7
8 // Thresholds
9 const int ACC_THRESHOLD = 15000;
10 const int GYRO_THRESHOLD = 15000;
11 const float TEMP_THRESHOLD = 40.0;
12 const float PRESSURE_LOW = 95000.0;
13 const float PRESSURE_HIGH = 105000.0;
14
15 void sendSensorData() {
16     // Read MPU6050
17     int16_t ax, ay, az, gx, gy, gz;
18     mpu.getMotion6(&ax, &ay, &az, &gx, &gy, &gz);
19
20     // Read BMP280
21     float temperature = bmp.readTemperature();
22     float pressure = bmp.readPressure();
23     float altitude = bmp.readAltitude(1013.25f); // Sea level
24 }
```

1	Pressure	V0		Double	hPa	false	0	1000
2	Temperature	V1		Double	°C	false	0	1000
3	Altitude	V2		Double	cm	false	0	1000

Snapshots

- Circuit setup on breadboard with ESP32 and sensors
- Blynk mobile dashboard displaying real-time data
- Graphs showing motion and pressure logs
- Snippet from Arduino code