AIRCRAFT STATE MONITORING SYSTEM

ASMS

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PROJECT DESCRIPTION

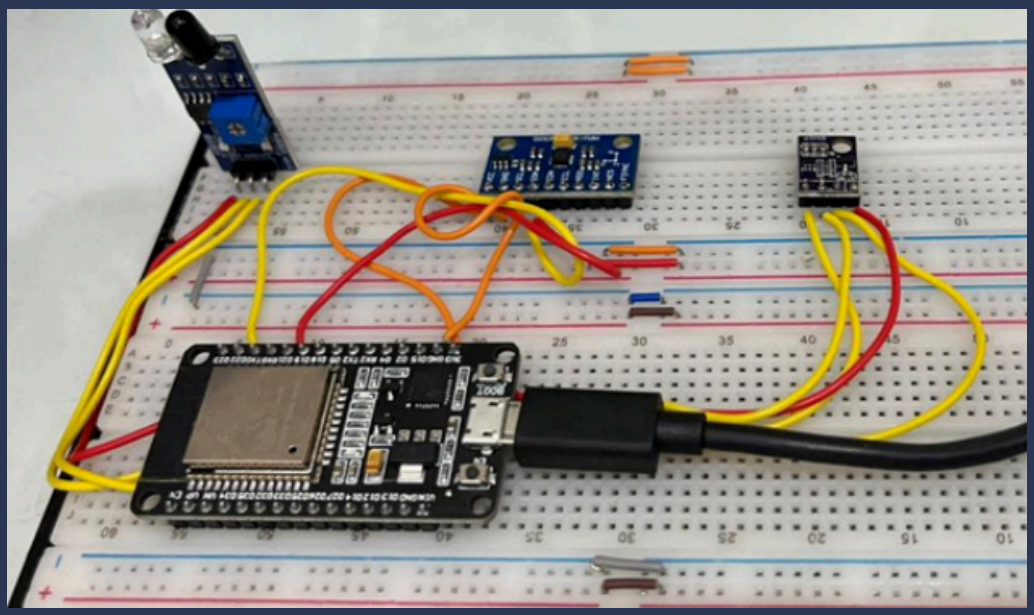
The Aircraft State Monitoring System is an advanced network-based solution designed to track an aircraft's motion and environmental parameters in real time. Utilizing IoT protocols and wireless communication, the system offers an affordable and scalable alternative to conventional aircraft monitoring setups. The key features include real-time data feedback, mobile accessibility, and live graphical logging through an intuitive dashboard.

PROBLEM STATEMENT

Modern aviation demands continuous monitoring of critical variables such as orientation, acceleration, pressure, and altitude. Existing systems often fall short due to high complexity, cost, and lack of remote monitoring capabilities. This project addresses these challenges by proposing a lightweight and remotely accessible monitoring solution that is cost-effective and scalable for both educational and commercial applications.

SENSORS USED

- ESP32 Microcontroller: Enables Wi-Fi connectivity and processes sensor data.
- MPU6500 Sensor: A 3-axis accelerometer and gyroscope used to monitor motion and orientation.
- BMP Sensor: Measures atmospheric pressure and altitude.
- IR Sensor: Detects proximity to the ground or nearby obstacles.



SOFTWARE COMPONENTS

- Arduino IDE: Used for writing and uploading code to the ESP32.
- MQTT Protocol: Facilitates lightweight and efficient data transmission.
- Blynk App: Provides a mobile dashboard for real-time data visualization and monitoring.
- Alert System: Optional software feature to notify users about abnormal sensor readings.

PROJECT FEATURES

- Real-time feedback on aircraft state
- Mobile monitoring from any location
- Live graphing of motion and pressure data
- Remote control functionality via the Blynk dashboard
- Cost-efficient and scalable system design