Air Quality Monitoring System using IoT

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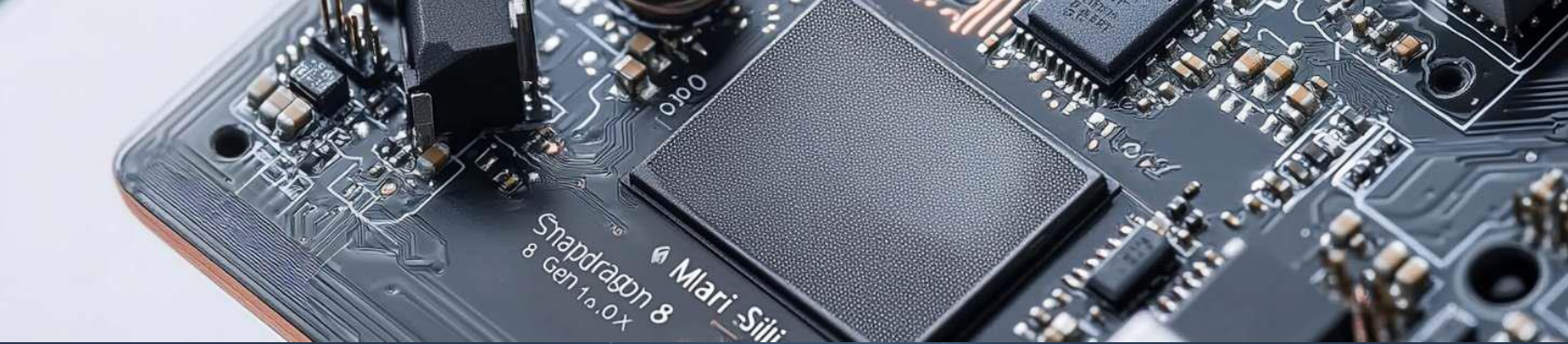
Abstract

Real-time Monitoring: Continuously tracks air quality using sensors like MQ135 and DHT11, connected to ESP8266/ESP32.

Data Visualization: Displays AQI levels, pollutant trends, and alerts users when pollution exceeds safe limits.

User-Friendly Insights: Suggests safe times for outdoor activities and raises awareness about environmental health.

Introduction

Content should be technical, clear, and tailored for an academic project.

Highlight how the system collects and transmits environmental data and its importance in real-time air quality monitoring.

Objective

1 To develop an efficient air quality monitoring system using IoT.

2 To provide real-time data on air quality.

3 To create awareness regarding air pollution.

Literature Survey

Review existing literature on air quality monitoring systems.

Analyze various methodologies and technologies used in current systems.

Identify gaps in the existing systems and propose enhancements.

Existing System

1 Describe the limitations of current air quality monitoring systems.

2 Highlight the lack of real-time monitoring in traditional setups.

3 Discuss the challenges faced in data collection and transmission.

Proposed System

1 Introduce the proposed air quality monitoring system design.

2 Detail the integration of the ESP8266 Wi-Fi module, DHTll, and MQl35 sensors.

3 Explain how the system improves data accessibility and response time.

ESP8266 Wi-Fi Module

1 Description of the ESP8266 features and functionalities.

2 Discuss its role in data transmission.

DHTll Temperature and Humidity Sensor

Explain the working principle of the DHTll sensor.

Importance of temperature and humidity data in air quality assessment.

MQ135 Air Quality Sensor

Overview of MQ135 sensor capabilities.

Importance of detecting various gases to measure air quality.

Future Enhancements

1 Suggest improvements for system efficiency and accuracy.

2 Discuss potential for integration with mobile applications.

3 Propose a more extensive network of monitoring stations for broader data collection.

References

ESP8266 Documentation – Espressif Systems

DHTll Sensor Datasheet – Adafruit

MQl35 Gas Sensor – ComponentslOl

Arduino Project Hub – https://create.arduino.cc/projecthub