



IoT-Based Air Control Monitor System

Monitoring air quality in real-time helps identify pollution sources and protect health.

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Project Significance

Health Risks

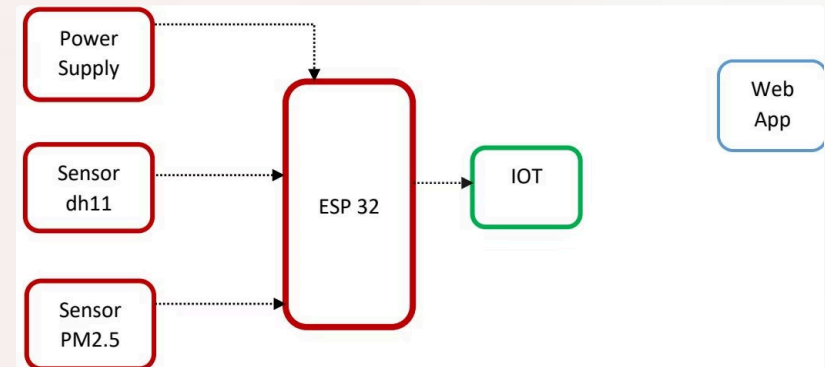
Particulate matter causes respiratory and cardiovascular diseases.

Cost-Effective Solution

Traditional systems are expensive; this project offers affordable real-time monitoring.

Remote Monitoring

Users can track air quality remotely via a web interface.





Methodology: Software and Implementation

Workflow from Hardware Components to Software

- **Sensor Integration:** ESP32 collects data from DHT11 (temperature/humidity) and PM2.5/PM10 sensors.**Data Transmission:** Real-time data is sent to a web-based dashboard using Wi-Fi.
- **Web Interface:** Displays live data trends and historical analysis through graphs.
- **Development Tools:** Arduino IDE, Embedded C/C++, HTML, CSS, JavaScript, Python/PHP.
- **Hardware Components:** ESP32, sensors, Vero board, power supply.

ID	Temperature (°C)	Humidity (%)	Pressure (hPa)	Altitude (m)	Timestamp
718	25.7	39	1001.31	99.89	2025-05-08 07:56:47
717	25.8	39	1001.3	99.97	2025-05-08 07:56:39
716	25.8	39	1001.31	99.92	2025-05-08 07:56:31
715	25.9	39	1001.29	100.06	2025-05-08 07:56:24
714	25.9	39	1001.29	100.08	2025-05-08 07:56:14
713	26	39	1001.3	99.97	2025-05-08 07:56:00

Results



Real-Time Monitoring

System successfully collects and transmits air quality data live.



Data Visualization

Web interface shows clear graphs and trends for user analysis.



Remote Access

Users can monitor air quality from anywhere with internet access.

Limitations and Challenges

Sensor Accuracy

Environmental factors can affect sensor readings.

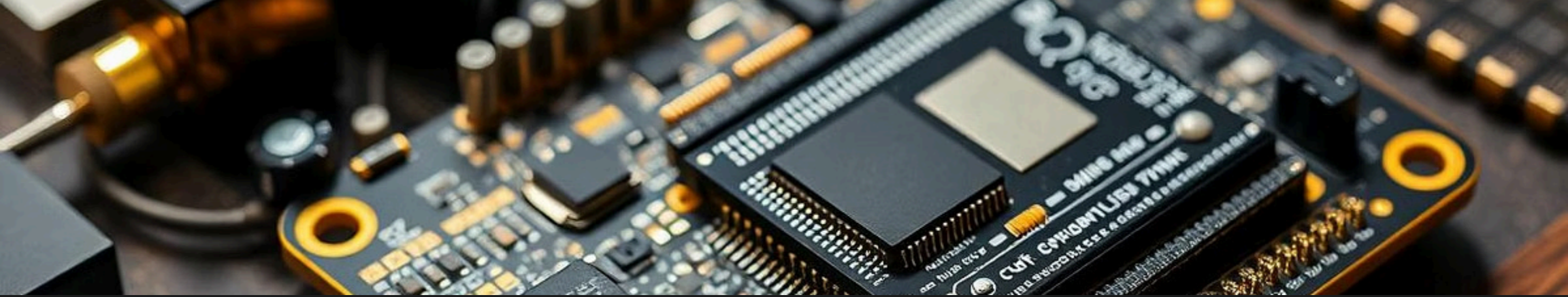
Connectivity Issues

Wi-Fi interruptions may delay data transmission.

Power Supply

Stable 5V power source is essential for continuous operation.





Budget Estimation

ESP-WROOM-32 Microcontroller	1800 PKR
DHT11 Temperature/Humidity Sensor	500 PKR
PM2.5/PM10 Dust Sensor	2000 PKR
Vero Board & Miscellaneous	700 PKR
Total Estimated Cost	5000 PKR



Conclusion and Future Work

This IoT system offers low-cost, efficient real-time air quality monitoring.

Future enhancements include adding more sensors and advanced features.

It promotes environmental awareness and healthier living conditions.

Github Link

AbdulBasit4532/IoT-Based-Air-Control-...



This project develops a low-cost IoT-based air quality monitoring system using an ESP32 microcontroller. It collects real-time data on temperature,...



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Contributor



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Issues



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Stars



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Forks



GitHub



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This project develops a low-cost IoT-based air quality monitoring system using an ESP32 microcontroller. It collects real-time data on temperature, humidity, and...