Patent Search

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Abstract:

The present invention discloses an IoT-based air quality monitoring and automatic ventilation system designed to detect harmful pollutants and initiate corrective actions time. The system comprises a microcontroller interfaced with a multi-gas sensor module for measuring CO, CO_2, CH_4, smoke particulates, temperature, and humidity. A reg power supply ensures stable operation of the sensing and communication circuitry. An IoT communication module transmits live environmental data to a cloud server for monitoring, analysis, and alerts. Threshold comparison logic determines when pollutant concentrations exceed safe limits, upon which the microcontroller activates a vent actuator and triggers user notifications. The invention provides autonomous, reliable, and cost-effective indoor environmental management suitable for residential, comm and industrial applications.

Complete Specification

Description:FIELD OF THE INVENTION

[001] The present invention relates generally to the field of environmental sensing systems and automated air-quality control technologies. More specifically, the inventic pertains to an Internet of Things (IoT)-enabled system and method for real-time monitoring of harmful airborne contaminants using multi-gas sensor arrays, and for automatically initiating corrective ventilation actions based on detected pollutant concentrations. The invention further concerns integrated cloud-based data acquisitior remote alerting mechanisms, and autonomous activation of exhaust or purification devices to maintain safe air conditions in indoor and semi-indoor environments.

BACKGROUND OF THE INVENTION

[002] Air quality has become a critical concern in residential, commercial, industrial, and institutional environments, owing to increased emissions of pollutants such as carbon monoxide (CO), carbon dioxide (CO_2), methane (CH_4), smoke particulates, and other hazardous airborne chemicals. Conventional air-quality measurement practic rely primarily on manual monitoring tools or standalone detectors that provide isolated readings without enabling integrated, real-time oversight. Such traditional syster are typically limited to local alarms or indicator lights that alert only the individuals physically present near the device. These methods are inadequate for large spaces, unattended rooms, or environments where immediate corrective action is essential to prevent health hazards, accumulation of toxic gases, or compromised ventilation.

View Application Status

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