DESIGN OF A CIGARETTE SMOKE MONITORING AND CONTROL SYSTEM BASED ON THE INTERNET OF THINGS (IOT)

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ABSTRACT

This research designs and develops an Internet of Things (IoT)-based cigarette smoke monitoring and control system, using a case study in the KAPMI Hall of Yogyakarta Special Region, which has a high smoking rate and lacks an automated air quality monitoring system. This system aims to detect and respond to the presence of cigarette smoke in real time through a mobile application. The design includes the integration of an MQ-135 sensor for smoke detection, an ESP32 microcontroller as a control center, and a Firebase Realtime Database for cloud data storage. The MIT App Inventor-based application allows users to monitor smoke levels in ppm (PPM) and fan status (ON/OFF). When the smoke concentration exceeds the threshold of 100 ppm, the system automatically activates a buzzer as an alarm and a fan as a ventilation system, sending a notification to the application. Tests show that the MQ-135 sensor is effective in detecting various types of smoke, such as cigarette smoke, vape smoke, and burning paper, with a fast and accurate response. These results demonstrate that the IoT system architecture used is capable of providing a responsive and applicable air quality monitoring solution.

Keywords*: Internet of things (IoT), Cigarette Smoke, MQ-135 Sensor, ESP32, Firebase Realtime Database, MIT App Inventor, Air Quality.*