Design and Construction of a Fire Detection System with Real-Time Notifications via the WhatsApp API Application

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ABSTRACT

Fire is a disaster that can cause significant losses, both material and human losses, especially if detection is delayed. To address this issue, this study designed and built an Internet of Things (IoT)-based fire detection system capable of providing early warnings through real-time notifications using the WhatsApp API application. This system utilizes a NodeMCU ESP8266 microcontroller integrated with a flame sensor and a DHT11 temperature/humidity sensor. When a fire or temperature exceeds a threshold is detected, the system automatically activates a buzzer, sends a notification to the user's WhatsApp account, and records the data in Google Sheets. This system is also designed to be energy-efficient and easy to implement in homes, offices, or industrial environments. Implementation results show that the system is able to effectively detect potential fires and provide fast and accurate warning information to users.

Keywords*: Internet of Things, Sensor, WhatsApp API, real-time notification, Google Sheets.*