

# **IMPLEMENTATION OF A FIRE DETECTION SYSTEM BASED ON TELEGRAM NOTIFICATION**

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## **ABSTRACT**

*Fire is an unavoidable event and needs to be anticipated as early as possible. Fires can occur anywhere, one of which is in residential homes. Fire cases in Indonesia continue to increase, one area that frequently experiences fires is Magelang Regency. In 2024, the region experienced 294 fire incidents. From these fire cases, the fire quickly grew because there was no warning alarm and notification if a fire was occurring. The goal is to make it easier for home occupants to monitor the condition of the room. The system is designed based on the Internet of Things (IoT) using NodeMCU ESP8266 as a microcontroller, a fire sensor to detect flames, a DHT11 sensor to detect temperature, an MQ-2 sensor to detect smoke intensity, coordinate points used as system locations, an I2C LCD and Thingier.io to display sensor readings, a buzzer for warning alarms, an LED as a danger indicator and the Telegram application to receive notification messages. The overall test of the device was carried out 20 times. The results of the overall test of the device are that the fire sensor is able to detect fire with a maximum distance of less than 35 cm. When a fire is detected, the system automatically activates a buzzer to sound a warning alarm and sends a notification message to Telegram. The DHT11 sensor can detect temperatures between 24.10°C and 32.30°C, and the MQ-2 sensor can detect smoke intensity between 314 and 830 ppm. When the DHT11 sensor detects temperatures above 30°C and smoke intensity above 600 ppm, the system successfully activates the LED as a danger indicator and sends a notification message to Telegram. Notification messages can be received by users with a delay of less than 5 seconds.*

**Keywords:** *Fire, Telegram, Thingier.io*