

### **ABSTRACT**

IoT-based smoke detector using Arduino NodeMCU as a microcontroller, aims to design and implement a smoke detection system based on Arduino NODEMCU equipped with a buzzer alarm and message notification via Telegram. This system is designed to improve indoor security by utilizing Internet of Things (IoT) technology for monitoring and early warning of fire.

This prototype uses an MQ-2 smoke sensor connected to a NODEMCU microcontroller board, which processes signals from the sensor and sends data via a Wi-Fi connection. When the sensor detects a smoke concentration that exceeds a certain threshold, NODEMCU will activate the buzzer alarm to provide an auditory warning. In addition, this system is equipped with the ability to send instant notifications via the Telegram application, using an integrated Telegram bot, to notify users of potential fire hazards in real time.

The development methodology involves designing electronic circuits, programming microcontrollers, and integration with the Telegram platform. System evaluation is carried out through a series of trials to ensure the accuracy of smoke detection, reliability of the buzzer alarm, and timely message delivery.

The results of this project demonstrate that the Arduino NODEMCU-based Smoke Detector System prototype can provide an effective and responsive early warning system for indoor fire risks, as well as providing a practical and affordable solution to improve safety.

Keywords: Smoke, IoT, Smoke Detection, NodeMCU