

UNIVERSITI TEKNOLOGI MARA

**FIRE ALARM SYSTEM WITH REAL-
TIME MONITORING AND ALERT
SYSTEM USING IOT**

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ABSTRACT

This paper covers the design and implementation of an Internet of Things (IoT)-based fire alarm system with real-time monitoring and alerting features. By utilising IoT sensors, wireless connectivity, and cloud-based platforms, the suggested system seeks to improve conventional fire detection techniques and offer quick and precise fire detection, instantaneous notifications, and remote monitoring. A variety of sensors, including temperature and fire detectors, are included into the system architecture and are positioned strategically across the monitored area. These sensors collect data continually and use wireless networks to send it to a central IoT hub. The hub uses sophisticated algorithms to assess incoming data in real time and identify any fire problems. Additionally, the system makes remote monitoring possible with an easy web or mobile device interface. Users are empowered to make informed decisions and take proactive measures to maintain fire safety by having access to real-time sensor data and system status. With its real-time monitoring and alerting features, the suggested fire alarm system uses the Internet of Things to transform fire safety procedures by providing remote accessibility, quick detection, and quick reaction. Because of its versatility and scalability, it may be used successfully in a range of contexts, including commercial, industrial, and residential ones. This helps to improve safety regulations and reduce the risk of fires.

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CHAPTER 1

INTRODUCTION

1.1 Project Overview

In a time of rapid technological development, making sure that fire safety precautions are strong is still an issue. Using a combination of hardware and IoT technologies, the Fire Alert System with Arduino and IoT stands out as a shining example of innovation, revolutionising fire threat detection and response procedures.

Fundamentally, this project represents a paradigm-shifting attempt to go beyond traditional fire alarm systems through the integration of Internet of Things (IoT) connectivity with Arduino-based sensors. The system consists of a number of sensors, including temperature, fire, and infrared (IR), which are all expertly combined with output elements like an LCD display, LED indicators, and a buzzer to form a comprehensive ecosystem for fire alerts.

The effective completion of this project will provide an economical, yet effective, way to detect fire in a variety of settings. Enhancing early fire detection could minimise the impact of fire-related disasters and reduce response times.

1.2 Objectives

1. To create a robust and responsive fire alert system that integrates Arduino-based sensors and IoT connectivity.
2. To detect fire hazards through real-time monitoring of environmental parameters.