IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 8, April 2025
Impact Factor: 7.67

Design and Development of Robotic Fire Detection and Extinguishing System

Randhe Vishal Dnyaneshwar, Jadhav Akshay Gorakshnath
Dole Nikita Babasaheb, Bilware Yogita Vilas, Kolhe Sandeep. V
S. N. D. College of Engineering & Research Center, Yeola

Abstract: *Fire emergencies pose serious threats to life, property, and the environment. This paper presents the design and development of an autonomous robotic system capable of detecting and extinguishing fires using a combination of sensors and microcontroller-based actuation. The proposed system integrates temperature, flame, smoke, and ultrasonic sensors with a water-based extinguishing mechanism, all controlled remotely via an RF-based interface. The robot enhances fire response speed and reduces human risk, particularly in inaccessible or hazardous zones. The prototype demonstrates promising results in test environments, indicating potential for real-world applications in industrial and residential safety systems.*

Keywords: Fire fighting Robot, Arduino UNO, Flame Sensor, Wireless Control

DOI: 10.48175/568