

# **IoT based Fire Extinguisher Robot with Bluetooth Controller**

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**Abstract:** *In hazardous environments such as chemical plants, gas stations, and industrial zones, firefighting operations pose significant risks to human life. To address this challenge, we developed an IoT-based Fire Extinguisher Robot capable of detecting flames, gas leaks, and human presence using integrated sensors like flame, LPG, gas, and PIR sensors. The system incorporates a Bluetooth controller for local manual operation in addition to Wi-Fi-based remote control, enhancing its flexibility in various scenarios. A live video feed from the ESP32-CAM allows real-time monitoring. Sensor readings are continuously uploaded to the cloud through IoT technology for real-time monitoring and analysis. The robot is built using an Arduino Nano, ESP8266, and L298N driver to ensure responsive control and reliable communication. This multifunctional robotic platform not only improves operational safety but also minimizes human intervention in fire-prone environments.*

**Keywords:** Arduino, WiFi Cam, IoT, PIR Sensor, Flame Sensor. Bluetooth module

