**LITERATURE SURVEY**

**Industry-specific intelligent fire management system**

**Topic:1**

IOT BASED FIRE ALARM SECURITY SYSTEM

**Authors:**

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**About:**

Fire alarm systems are essential in alerting people before fire engulfs their homes. However, fire alarm systems, today, require a lot of wiring and labor to be installed. This discourages users from installing them in their homes. Therefore, we are proposing an IoT based wireless fire alarm system that is easy to install. The proposed system is an ad-hoc network that is distributed over the house. This system consists of a microcontroller (ESP8266 nodeMCU) connected to an infrared flame sensor that continuously senses the surrounding environment to detect the presence of fire. The microcontrollers create their own Wi-Fi network. Once fire is detected by a sensor, it sends a signal to a microcontroller that is triggered to send an SMS to the user, call the user and alert the house by producing a local alarm. The user can also get information about the status of his home via sending an SMS to the system. A prototype was developed for the proposed system and it carried out the desired functionalities successfully with an average delay of less than 30 seconds.

**Limitations:**

* Very sensitive, which can lead to false alarms as a product of cooking.
* Use of radioactive material is a concern.
* Not as responsive to smoldering fires

**Topic:2**

LPWAN Based IoT Surveillance System for Outdoor Fire Detection

**Authors:**

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AND VLADIMIR SANCHEZ PADILLA , (Member, IEEE)

**About:**

Many fire situations have represented the loss of lives and material costs due to the lack of early fire detection through smoke or gas sensing, which can become complex and critical. Meanwhile, engineers worldwide develop and test multiple systems for smoke and gas detection, commonly based on sensor networks, digital image processing, or computer vision. Furthermore, the detection system must work thoroughly with alarms and warnings that aware of a risk situation for prompt evacuation of the population in the surroundings based on a reliable data network topology with adequate device deployments that will let us know the moment a fire outbreak. This paper presents a low-cost Internet of Things (IoT) prototype for fire detection in outdoor environments based on sensors and Low Power Wide Area Network (LPWAN), focused on the accuracy in the temperature and gas measurement at the moment a fire starts. For its achievement, we integrated wireless components, development boards, and electronic devices, following the management of information updates through a database schema for the alarm settings based on the data gathered from the sensor

**Limitations:**

* Cost may be high.
* Miscommunication may happen as it is wireless system.

**Topic: 3**

GSM based Smoke detector with SMS alert using Arduino

**Reference link:**

https://www.projectsof8051.com/gsm-based-smoke-detector-with-sms-alert-using-arduino/amp/

**About:**

Smoke Sensor: We have used an MQ series gas sensor to detect the smoke. This sensor operates on 5 volts and gives analog output. The output from the MQ smoke sensor is connected to the analog input pin of the Arduino UNO.Arduino has an inbuilt ADC which converts the analog input into the respective digital value.

Arduino Uno displays this value of the smoke sensor on the LCD display. We have used a 16 by 2 alphanumeric Liquid crystal display (LCD display) in the smoke detector project. Arduino continuously keeps on displaying the value of the smoke sensor on the LCD display. Arduino turns on a buzzer and a relay, whenever the value of the smoke sensor crosses the threshold level.

And at the same time, an SMS is sent to the registered mobile number. We can send SMS to two mobile numbers. Also, we can dial a call to these two mobile numbers. We have used a relay as an output device in this project. This relay is an additional feature of this project. The relay will be turned on when smoke is detected. For demonstration purposes, we have connected a 12-volt dc fan to this relay. The function of the fan is to clear the smoke whenever it is detected. You can connect any AC or DC output device to this relay.

**Limitations:**

* High Sensitivity
* High sensitivity to Ammonia, Sulphide, and Benzene
* Dimensions: 18mm Diameter, 17mm High excluding pins, Pins – 6mm High

**Topic: 4**

An Automated Smart Embedded System on Fire Detection and Prevention for Ensuring Safety

**Authors:**

Publication No: 21464147( IEEE)

**About:**

One of the biggest issues for architects, planners, and landowners is house combustion. Singular sensors have been used in the case of a fire for a long time, but they cannot quantify the volume of fire to warn emergency service units. To resolve this problem, this research aims to develop an intelligent smart fire warning system that detects fires utilizing connected sensors and alerts property owners, emergency services. The current model is divided into three modules: Smoke Detection Module (SDM), which is responsible for detecting smoke to prevent unwanted incidents; Notification Send Module (NSM), which is responsible for creating an alert service to alert the closest support center and user; and Emergency Alarm Module (EAM), which is responsible for handling the emergency alarm schedule when a fire arises. The results prove that the device worked well, and it should be remembered that our proposal can be integrated into any kind of setting, such as a house, workplace, ship, or industry.

**Limitations:**

* Little complex to set up.
* Cost of set up is high.

**Topic: 5**

IOT Based Fire Alarm Notification and Extinguisher System

**Authors:**

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**About:**

Because of the potential loss of life and property, a fire outbreak must be avoided at all costs. If left unattended, a fire can quickly spread and take days to extinguish. As a result, when this technology becomes available, it will aid in the reduction of uncontrollable this technology must be used to reduce or possibly eliminate this significant risk as a result of the cause of heavy damage. A fire alarm detection, notification, and extinguisher system was designed in this study. When a fire occurs, this system includes a GSM module that allows it to send SMS (short messaging service) notifications and phone calls to shop owners or house owners about the fire incident before the fire makes damage. The study also identifies a system that is both affordable and can be accessible by the general public and private sector, allowing it to be used to protect people and property in homes, offices, shops, public places, and schools. If and when the system is commercially available, fires. It has grown 50% because it will warn potentially harmful situations prior to a fire accidents. If the smoke sensor detects a temperature that is not within the range we specify, the fire alarm will sound using a buzzer; if the temperature exceeds the specified level, the photo will be sent to the owner via mail, and a call and message will be sent to the specified owner. If the owner confirms and sends a message indicating to turn on the pump, the extinguisher will activate.