

## LITERATURE SURVEY

1.

**TITLE:** SMART FIRE WARKING SYSTEM

**AUTHOR:** Moosa Al-Ismaili, Mansoor Ali

**YEAR:** 2012

**HARDWARE COMPONENTS:** Microcontroller, smoke detector, LED,GSM module.

**SOFTWARE:** SIM900.h , SMS.h , tiny GPS .h, software serial.h

**ADVANTAGE:**

- Highly sensitive and be able to detect any smoke or gas leak.
- Able to know the exact coordinates of the location.
- It respond quickly.

**APPLICATION:**

- It provide full security from fire and gas leak for home or office at a low cost.

**DRAWBACKS:**

- The reliability of the system cannot be found directly because the operation of the system depends on many sensors and associated parameter.

**CONTENT:**

The developed smart fire warning system is determine the location of the fire and send a message containing the location coordinates to a proset mobile number. The system using location information using a GPS and sends a short alert message using a GSM communication module. Appropriate sensor were used to detect smoke and gas leak as the onset of fire.

2.

**TOPIC:** SMART FIRE DETECTION AND DETERRENT SYSTEM FOR HUMAN SAVIOR BY USING INTERNET OF THINGS.

**AUTHOR:** Muhammad ahmad qureshi, Tariq Ali, Muhamad ifran

**YEAR:** 3 September 2021

**HARDWARE USED:**

- Arduino Uno microcontroller ,
- DHT22 temperature and humitivity sensor,
- flame sensor used in SMDD ,
- smoke sensor MQ2,
- specification and layout of smoke sensor.

**SOFTWARE USED:**

- MATLAB fuzzy logic tool box,
- Arduino IDE1.8.5 was used (C Language).

**ADVANTAGE:**

- The Single sensor system might cause false Result as there are different factors to be consider when detecting fire and false Result were end up wasting energy or worse end up causing property damage.

**CONTENT:**

The paper discuss the Result of the are then used to perform alert and support task depending upon the severing of the fire, such as while detecting the level of smoke in air. The system starts Ventilation to avoid suffocation and also starts a water sprinkler that act as a first line of defense untill the fire Department arrives.

3.

**TOPIC:** ELECTRONIC FIRE ALARM

**AUTHOR:** Manav Jain and Dr. Mohhamad Javaidsaddiq

**YEAR:** 2014

**HARDWARE:**

- Diode Alarm,
- hermister

**APPLICATION:**

- Smoke detection should be installed outside of each separate sleeping area in the intermediate vicinity of the sleeping room.

**CONTENT:**

The fire alarm circuit is useful for efficiency and can be used for security reason. Fire detection is best achieved by the installation and maintenance of the fire detection equipment in all room and area of the House or building.

4.

**TOPIC:** DESIGN AND IMPEMENTATION OF FIRE ALARM CIRCUIT

**AUTHOR:** Asok Bala, Md. Najmul Hossain

**YEAR:** March 2012

**HARDWARE:**

- Smoke detector,
- Light Dependent Resistor,
- LM7809 voltage regulator,
- BC547 Transistor.

**ADVANTAGE:**

- It is device that detect smoke an indicator of fire. Industrial and residential device issue a signal to fire alarm system while household detector known fire alarm. Gradually issue a local audible or visual alarm from the detector itself.

**CONTENT:**

This fire alarm circuit which can perform an alarm by the voice signal. In this project detect smoke using Light Dependent Resistor and Light Emitting Diode. Normally speaker no alarm but when smoke detect then alarming. This project is based upon a major approach to control and security home, office, market, University etc... For fire alarm main to using software and circuit finally implemented on the bread board.

5.

**TOPIC:** An IoT based fire detection, precaution and monitoring system using Raspberry pi3 and GSM

**AUTHOR:** Kullkarni sangam, T. Prasanna, K.Bramaramba

**YEAR:** 07 July 2019

**HARDWARE:**

- Raspberry pi3,
- Node MCU,
- GSM Module SIM808

**SOFTWARE:**

- "Python project. Py"

**ADVANTAGE :**

- The system to detect and alarm the employee before it breaks out and a crying need
- This will not cause loss for the inventor also would not be any data available to investigate cause and claim any insurance.

**CONTENT:**

The system which capable to detect the fire and provide location of the affected region. Raspberry pi3 has used to control the multiple node MCU which are integrated couple of sensor. 360 degree relay monitor is assembled with the camera so that it can stop the image in whatever angle the fire is detected. We have provided the conformation of the suspecting system to avoid any false alarm. This system will immediately send the message along with the image of the affected spot and node MCU location.

6.

**TITTLE:** FIRE ALARM ROBOT AND AUTHENTICATION SYSTEM USING RASPBERRY PI AND CLOUD

**AUTHOR:** Katravath Ravi, M.Raju Naik, S.V.S Prasad, Arulnanth T.S

**YEAR:** March 2019

**HARDWARE:**

- Raspberry pi,
- GSM module,
- Arduino mega,
- Gas and flame sensor,
- Bluetooth module and motor driver.

**SOFTWARE:**

- Raspbian OS,
- Raspberry pi web cam,
- “sudo apt. Get instant fswebcam”,
- Arduino software,
- “sudo apt. Get install Arduino ide.2”.

**ADVANTAGE:**

- Through mobile hotspot and internet from any Place to the world wide we will control the robot by using the input address of the particular mobile or any other device.

**CONTENT:**

We discuss the fire and gas and it can send the message, at a comparable it can send the mail of fire picture to the manager and it is in the way to show live status of the robot. Raspberry pi is used to control the device Arduino mega 2560 which mode with a couple out of sensor and camera and WiFi module.

7.

**TITTLE:** Fire alarm system using IoT

**AUTHOR:** R.Angeline,Adithya s,Abishek Narayanan.

**YEAR:** 2019

**HARDWARE COMPONENTS:** Raspberry pi, Gas sensor, flame sensor and temperature sensor, PIR sensor.

**ADVANTAGE :**

- Highly compact and provides an authentic detection process
- PIR sensor detect the exact location of origin of fire.
- Gas sensor detect the presence of any flammable gas.
- Temperature sensor detect the any unusual change in room temperature.

**DRAWBACK:**

- It will need a wi-fi network to connect.
- The algorithm is very complex and needed perfect conditions to work efficiently.

**CONTENT:**

In this paper,we will be using a wide variety of sensor to detect the presence of fire and alerts its presence to the watchman and fire officials. It also discusses the application of IoT technology in relation to fire detection technologies.

8.

**TITTLE:** IoT based fire detection system

**AUTHOR:** Devanshi pandey, Rutuja pawar, santosh rathod, chetan mahajan

**YEAR:**2021

**HARDWARE:** Arduino uno board, Node MCU, smoke sensor, connecting wires, LEDs, power supply ,Buzzer, LCD display.

**APPLICATIONS;**

- Some domains where WSN is used
- Wearables
- Smart home applications
- Health care
- Smart cities
- Agriculture.

**ADVANTAGES:**

Implementing relay nodes to ensure fault tolerance, that is increasing network connectivity.

It is cheap and easy to install.

**CONTENT:**

In this paper describes the model continuously monitors fire alarms and sends alarms to users. Call them when you find the fire.the answer is sent to the user via sms. Using this product can help these people quickly learn about the incident and the nearest fire department. You will receive a valid notification.

9.

**TITLE:** Fire monitoring and controlling system based on IoT.

**AUTHOR:** Nitin Galugade, Devika Nair, Mahesh jakkar,deepti patne,madhur gawas.

**YEAR:**2020

**HARDWARE:**

Relay, Node MCW,IoT alarm, DHT 11.

**APPLICATION:**

Industries, malls, residential areas, parking etc...

**CONTENT:**

In this paper describe detecting fire or smoke at aan help in an early stage and can help in saving lives. Commercial fire detecting system usually have an alarm signaling, with the help of a buzzer. It also describe design an IoT based fire alerting system using temperature and a smoke sensor which would not only signal the presence of fire in a particular promise but will also send related information through IoT.

10.

**TITTLE:** Developed intelligent fire alarm system.

**AUTHOR:** Hussam Elbehiery.

**YEAR:** 2012

**HARDWARE:** wireless main unit control panel, slave unit control panel, analog conventional detectors,LED, LCD display, alarm.

**ADVANTAGE:**

- Low cost system
- Addressable system
- Integrated networkability.
- Conventional detector used lower wiring cost.

**DRAWBACK:**

Disadvantage of system will be failed if the slaves unit network has a failure.

**CONTENT:**

The main purpose of fire alarm system is to provide an early warning of fire so that people can be evaluated and immediate action can be taken to stop and eliminate of the fire effect. Alarm can be triggered by using detectors or by manual call point.

11.

**TITLE:** An IoT based fire detection and monitoring system

**AUTHOR:** G.Roop Krishna Chandra, P.venkateswara rao, ch shiva rama Krishna.

**JOURNAL:** International journal of scientific research an review.

**YEAR:** 2019

**HARDWARE:** Arduino uno board

**SOFTWARE:** Embedded system.

**ADVANTAGE:**

This system help us to monitor the environment parameter from anywhere is the world.

To reduce the occurrence of fire in factory.

**APPLICATION:**

Industries.

**CONTENT:**

In this paper we discuss about, we have propounded a system which is capable to detect fire and alert before it gets broken out. we have designed a system and implemented using arduino board which will monitor the factory environment continuously. This system can be monitored system can be monitored anywhere is the world by using IoT the technology has become improved and it is used to develop machine that can substitute human and replicate human action.

Robots can be used in many situation and lot of purpose, but today many are used in dangerous application. robots can take on any form but some are made to resemble human in appearance.

12.

**TITLE:** Design of a home fire detection system using arduino and sms gateway.

**AUTHOR:** suwarjono, izak habel wayang kau, reddy istanto, rachmat, marsujitullah, hariyanto, wahyu caesurendra, Stanislaw legutko.

**YEAR:** 2021

**HARDWARE:** Intel core i3-7020v processor, hard drive, RAM, arduino uno board, temperature sensor, GSM module.

**SOFTWARE:** windows 10 operating system, arduino IDE, E Draw max

**ADVANTAGES:**

It can provide information on fires that occur quickly to home owners and rescue fire to losses and minimize possible fatalities.

**DISADVANTAGES:**

The time for detecting room temperature is longer, which is 60min ,while for gas detection testing, it is only 30 min because the room a longer than the time to release gas into the room.

**APPLICATION:**

House and residency.

**CONTENT:**

This research aims to build to prototype system that quickly helps house owners and fire fighters to detect fires and gas leaks . this home detection system is utilized to measure room temperature and gas levels in a room , then the output of this system is sending information of short messages and alarms. The results revealed that the prototype room with scale 1:25, 1:50 and 1:75 which users a temperature sensor and a gas sensor would run as desired. In 10 testing trailer, the system works according to the designed plan,which means the system could interpret the temperature and gas of a room,then the system will send a short message and ring the alarm.

13.

**TITLE:** IoT based automatic fire alarm system.

**AUTHOR:** A.T.Jeevanandhan, p.sivamurugan.

**YEAR:** 2020

**HARDWARE:** smoke sensor, temperature sensor,LCD screen,arduino uno board, GSM module.

**SOFTWARE:** computer programming languages.

**ADVANTAGE:**

Prevent from the fire accident in the industries and hazardous place.

**APPLICATION:**

Industries, office and homes.

**CONTENT:**

In this article, IoT based alarm has been planned utilizing temperature and smoke sensor. It would not just flag the nearness of the fire in a specific reason yet will likewise send related data to portable through IC. By utilizing the temperature sensor, smoke sensor and there is a simple to advance convertor, which changes over the simple sign get at the sensor end to computerized and transmit them to a smaller scale controller and to the arduino.the small scale controller is modified to turn on the rings. When the smoke arrive at the edge esteem,hy,arduino send the information to the

wi-fi module FSP8266. It will then the accompanying information to the wi-fi, where approved individuals can take fitting means as to check the fire.

14.

**TITLE:** IOT FIRE DETECTION SYSTEM USING SENSOR AND ARDUINO

**AUTHOR:** Noor Abdul Khaleq, Osameh Ibrahim khallaq

**YEAR:** september 2019

**HARDWARE:**

- DHT- 11 Sensor

**SOFTWARE:**

- Arduino IDE

**ADVANTAGE:**

- Cost is low

**APPLICATION:**

- House,
- Office

**CONTENT:**

One of the major problem in security means deals with its fire outbreak that can happen in everywhere including House, schools, factories and many other places and be avoid that are be minimised the damage caused by the fire outbreak, the IoT technology is used in gateway.

In this project we will use temperature sensor known as flame sensor with Arduino device to detect the fire outbreak and we measure the amount of heat Intensity generated by a fire outbreak or in a specific location in house, Office and other

15.

**TITLE:** AN IOT BASED INTELLIGENT FIRE EVALUATION SYSTEM

**AUTHOR:** Afranakhon, S.M. Faisal Rahman, Md Jamir ur Rahman, Afraida anzum aisha.

**YEAR :** December 2018

**HARDWARE:**

- Arduino mega,
- passive infrared sensor,
- Smoke sensor,
- heat sensor,
- LED display,
- buzzer.

**SOFTWARE:**



- Java

**ADVANTAGE:**

- Automatically notify the fire beyond the sources operation.

**APPLICATION:**

- Commercial building and industries.

**CONTENT:**

In this paper we have proposed an IoT based intelligent fire evaluation system that will effectively guide the people along the evaluation in case of fire occurrence.

The search algorithm is used to control the central module of the proposed module. This will help people evacuate out of danger by guiding through the shortcut path is possible. It shows the next best part of the optimal path in already crowded. The grid based plan is simulated both hardware and software, how beam designed and implemented accomplish a desired goal.

16.

**TITLE:** ARDUINO BASED FIRE DETECTION AND CONTROL SYSTEM.

**AUTHOR:** Muhammed Shazali Dauda, Usman sauh Toro.

**YEAR:** March 2020.

**HARDWARE COMPONENTS:**

- GSM module,
- DC pump motor,
- Microcontroller,
- Atmega 328p,
- Sensory module,
- Sound module.

**SOFTWARE:**

- Arduino IDE,
- C and C++.

**ADVANTAGE:** It is capable of automatically detecting heat in a given environment, sound an alarm, switch off mains of the building and also spray water to reduce the intensity of fire.

**APPLICATION:** A circuit that detects high temperature and consequently triggers an alarm, switch off the mains of the building, send SMS message and extinguish the fire.

**DRAWBACKS:** The problem is these conventional fire extinguishing systems are not enough to take prompt action during fire outbreak.

**CONTENT:** This document was Arduino based fire alarm detection and control system. It is capable of automatically detecting heat in a given environment, sound an alarm, switch off mains of the building and also spray water to reduce the intensity of fire.

17.

**TITTLE:** SMART FIRE ALARM SYSTEM USING ARDUINO.

**AUTHOR:** Ashwini.C, Delfin.S , Nelluri harinadh.

**YEAR:** May 2019.

**HARDWARE COMPONENTS:**

- Arduino,
- Fire sensor,
- Smoke sensor,
- Wifi modules,
- Alarm.

**SOFTWARE:**

Arduino IDE, C and C++.

**ADVANTAGE:** For most fire alarms, when sounded, bell or horn noise is made. This distinct sound exists to allow the notification to be heard the fire alarm constructed is reliable at low cost.

**APPLICATION:** Fire alarms can be found in homes, schools, churches and function as the catalyst to saving many innocent lives.

**CONTENT:** This project has to provide early warning of fire. They cause threats to the residential community and may result in deaths and property damage. In some cases, a fire alarm is a part of a complete security system, the fire alarm operates to alert people to evacuate a location in which a smoke/fire accumulation is present.

18.

**TITTLE:** NOTIFIRE:A MICROCONTROLLER (ARDUINO) OPERATED DEVICE FOR EARLY FIRE DETECTION AND RISK REDUCTION.

**AUTHOR:** Macro Antonio A. Galo, Kyle A. De La Torre, Rizelin John Ofelia.

**YEAR:** April 2018.

**HARDWARE COMPONENTS:** Arduino, GSM, Fire detection sensors.

**SOFTWARE:** Arduino IDE, C and C++.

**ADVANTAGE:** This device got a net promoter score of 33% that suggests a possible potential for marketing if the aesthetics is improved.

**APPLICATION:** It is used to fabricate a reliable get Low-maintenance fire detection system using sensors readily available in the market in order to address the challenge of maintaining the home security.

**DRAWBACK:** Automatic fire detection devices were made in order to minimize human error without the presence of humans.

**CONTENT:** In this research, an early fire detection device has been made along with a message sender response. The device has been made to detect temperature, gas and flame which are possible signs of a fire. The fabricated device, controlled by a Arduino microcontroller using flame, gas and temperature sensors.

19.

**TITLE:** DEVELOPMENT OF SYSTEM FOR EARLY FIRE DETECTION USING ARDUINO UNO.

**AUTHOR:** Digvijay singh, Neetika Sharma, Mehak Gupta, Shumbham Sharma.

**YEAR:** May 2017.

**HARDWARE COMPONENTS:** GSM Module, Arduino UNO, LIDAR, AVHRR, Temperature sensor, Humidity sensor, Smoke sensor, Gas sensor, Relay.

**SOFTWARE:** Arduino IDE, MATLAB and Embedded C.

**ADVANTAGE:** This system is a low cost, power efficient and based on the instruments that reliable as well as durable.

**APPLICATION:** we can use the multiple nodes for a single receiver node.

**DRAWBACK:** Some of the limitation of system was installation of too many antennas: continuous power was required at both temperature sensor setup and antennas.

**CONTENT:** This article has fire alarm systems are a real-time Monitoring system that detects the presence of fire and capture images via a camera and display it on a screen. Many future works are also possible in this system design.

20.

**TITLE:** IOT-BASED FIRE ALARM SYSTEM.

**AUTHOR:** Asma mahgoub, Nourhan Tarrad, Rana Elsherif, Abdulla Al-Ali, Loyal Ismail.

**YEAR:** April 2021.

**HARDWARE COMPONENTS:** IOT, Adhoc network, mesh network, fire alarm, ESP8266, Raspberry Pi.

**SOFTWARE:** C and C++.

**ADVANTAGE:** It carried out the desired functionalities successfully with an average delay of less than 30 seconds.

**APPLICATION:** Mobile application may be developed to be able to easily access the system remotely.

**CONTENT:** This document is IOT based wireless fire alarm system and ad-hoc network that consists of several nodes distributed over the house. It is capable of detecting the presence of fire, communicating with the concerned parties by calling them when a fire is detected and receiving and responding to SMS request from the user.

