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## SMART FIRE ALERT SYSTEM USING IOT

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## ABSTRACT

In order to comprehensively improve the sensitivity of fireplace warning and effectively shorten the warning time. a fireplace outbreak could be a major tragedy that has to be avoided by every possible means because of the potential loss of lives and property, fire when not controlled can grow large and will require days to bring in restraint. Hence this technology must be applied to attenuate or perhaps eliminate this great hazard. during this study, a fire alarm and detection system was developed. this technique was built with the GSM module embedded in it, which helps to send SMS (Short messaging service) to the house owners and therefore the fire service personal, when there's fire outbreak before it gets out of range. Furthermore, this study provides a technology that will be accessible and affordable to the globe at large in order that homes, offices, and schools can adopt the employment in other to safeguard lives and property. If and when the developed system is commercialized, it'll help reduce uncontrolled fires by 50% because it warns of dangerous conditions before a fireplace outbreak.

Keywords: SMS (Short Messaging Service), Fire Place, Detection System, GSM Module And Technology.

## I. INTRODUCTION

Fire device provides an early warning of hearth so as that individuals are going to be evacuated and immediate action could also be taken to forestall or eliminate of the fireplace effect as soon as possible so properties and lives won't be at stake. As human technology advances, the concerns of fireplace safety have rapidly increased also. Fire hazards became one in all the prime consequences of advanced technology and have claimed many lives, further as destroying countless properties and equipment within the household setting and also the commercial environment. Most systems make use of hearth Alarm panel (FACP) fitted with a Digital Alarm Communicator Transmitter (DACT), which sends information to the central station. However, just a few panels are fitted with this DACT, others need an external DACT unit for transmission. This brings about obsolescence due to the necessity of additional hardware and interfacing. this fire alarm systems also do A home owner who travelled, cannot know the status of his burning house from his location. Shows in their study, that major loss of lives and properties could occur before a fire hazard are going to be detected and tackled. Some remote monitoring systems are often designed by using Wireless sensor networks, Ethernet and other digital technologies, but they're faced with the issues of being too complex, expensive and having some levels of redundancy, similarly as low compactness, all this delivered to the event of an SMS based fire alarm and detection system that utilizes an SMS system that's configured to report back to specified number of occupants and a nearest Fire Services Department it is a cheap fire device which performs reliably to substantiate safety from fire, and may be easily installed in homes, industries, offices, restaurants etc.

### II. METHODOLOGY

During the course of the research some related works were found, a few are briefly discussed in this section:

#### A. Developed Intelligent Fire Alarm System

Developed an intelligent fire alarm built for the event of technology applications to commercialize fire alarm market demand growth. The system includes an effect panel, alarm initiating devices, notification appliances, and therefore the accessory equipment necessary for a whole Fire device.

### B. Fire Detection System with GSM Using Arduino

Developed a fireplace detection system with GSM using Arduino. this technique has a perfect gas sensor wont to detect the presence of a dangerous LPG leak in anyplace like cars, station, cylinders, vessel, and houses



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amongst other components. The systems is monitored by the Arduino Uno to spot the leakage of LPG if the signal is high then activates an fan for removing gas out from the realm and sends a message as "FIRE ALERT" to the registered mobile number.

# C. Fire- Detectors Review and Design Of An Automated Quick Responsive Fire-Alarm System Based On SMS

In this work a review of existing fire-detector types has been disbursed along with the event of an occasional cost, portable and reliable microcontroller based automated fire alarm for remotely alerting any fire incidents in household or industrial premises. The system was designed to alert the distant property-owner efficiently and quickly by sending short message (SMS) via GSM network.

#### D. Development Of Fire Alarm System Using Raspberry Pi and Arduino Uno

The development of hearth alarm system using raspberry pi and Arduino Uno can be a real-time monitoring system that detects the presence of smoke within the air due to fire and capture images via a camera installed inside a section when a fire occurs. This system has the facility to remotely send an alert when a fireplace is detected and may also need the user confirmation to report the event to the Firefighter using Short Messaging Service (SMS).

### III. MODELING AND ANALYSIS

#### **3.1 PROJECT SCHEMATIC DIAGRAM :**

A schematic, or schematic diagram, may well be a representation of the weather of a system using abstract, graphic symbols rather than realistic pictures. A schematic usually omits all details that do not seem to be relevant to the info the schematic is supposed to convey, and may add unrealistic elements that aid comprehension.



#### 3.2 SCHEMATIC DIAGRAM FOR CONNECTION BETWEEN ARDUINO BOARD WITH GSM :



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#### 3.3 BLOCK DIAGRAM FOR PROPOSED :



3.4 FLOW CHART OF THE HOME FIRE ALERT SYSTEM :





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#### 3.5 CIRCUIT DIAGRAM :

#### GSM Based Fire Alarm System Using Arduino



#### Fig: Circuit Diagram

The research addresses to any or all specifications for all microcircuit (IC) as stated within the manufacturers" data sheet. The proposed systems" circuit diagram showing the interconnection between devices is shown in figure.

#### IV. RESULTS AND DISCUSSION

In the research, special attention is placed on the critical condition that creates the component and the module operate efficiently. All components are discussed and therefore the functions during this section. the main problem accosted in engineering design is to completely and properly specify the wants of the look. The "Fire alarm using SMS" system design process involves the following:

1. Full analysis of the system specification.

2. Hardware design.

The hardware tasks include the definition and analysis of suitable circuit components employed in achieving the circuit design of the fireplace warning device using SMS. we've got the environmental sensors S1 to S4, these sense a fire /high temperature /interior pollution event and pass the knowledge to the Microcontroller MC; the microcontroller then assesses whether the mixture of readings from the sensors is really a hearth event or a false alarm; supported this, assuming an actual fire event, then the microcontroller activates the GSM module and sends an alert SMS to the varied response centers . To retard the hearth, the microcontroller also operates the servo to tilt a fire bucket and dowse the fireplace with flame-retardant materials. It is implemented using the components like temperature sensors, smoke sensors, etc. When fire is detected within the deployed area, the notification regarding the hearth accident are send to our mobile and an alert mail , with the specifications of the accident location are going to be send to the fire station together with the alarm buzzing, alerting the people around. With this technique, we will overcome the matter which is within the existing system.. we've got designed the code in such the way that whenever the hearth is detected by the sensor the alarm rings, a notification are sent to mobile(USER) and site of the incident and mail are sent to the fireplace station. So it'll be helpful for everybody and lifetime of the people are going to be saved within less time.

## V. CONCLUSION

In conclusion, the fireplace Alarm and Detection System Using SMS can be a value effective and medium coverage method of detecting, alerting and controlling fire and fire related incidents in an exceedingly



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residential setting or industrial environment. It makes use of a well-recognized technology and takes advantage of SMS capabilities so on realize its proposed goal effectively. this system work would save cost, provide reliable services, and alert nearest department of authorities, thereby reducing (or even eradicating) loss of lives and property. Its applications range from the common household setting even to large industrial environments.

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