

Warehouse Fire safety System using Internet of Things (IoT)

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Abstract: Nowadays, the safety and security of the "garment plant staff" have becoming a major problem. The garment plant workers face many issues and for sure one of them breaks out of the fireplace. The depositors are not showing any focus in this segment and not give significance to this segment is getting toneless. In this survey, the "fireplace identification framework" will be proposed and conjointly gives the data of the influenced area. Here we utilized ARM7 that areimplantedwith several kinds of the sensors. We offer the "associate authentication framework" to evade cautioning. The framework could immediately send a message to the management. The management will verify or reject the data. Whether the management verifies breaking out ofthe fire, then the framework could immediately increase the alarm and send a SMS to the close-by fire unit.

Keywords: Fire safety, ARM7, ESP8266, sensors, authentication, GSM.

1 Introduction

The "Internet of things (IoT)" will be becoming a well-known methodology in both workplaces and outside for this we live and how we tend to work. In this perception whichever gadget will be joined with the "internet of things (IoT)" and interface them to the web. This incorporates gadgets such as earphones, mobile phones, laundry machines, actuators to the weband they are presenting intellect attached to modify the progressive kinds of communication between persons and themselves. Gartner has conducted research and demonstrates that by "2020 over 26 billion to 64 billion gadgets" will be joined.

The internet of things will be asignificant network in that things are associated with "things-things, people-things, and people-people". In the previous two years, the IoT has limitless advancements and this made another development inmethodology and communication [2]. This develops the latest methods of internet of thingsis consequential to any time, anybody, anyplace, and anything, things about the IoT dynamic network [7] [10]. This methodology idea generally utilized for the advancement of "sensible homes framework" to supply luxury, enhanced the quality of living and intelligence of protection.

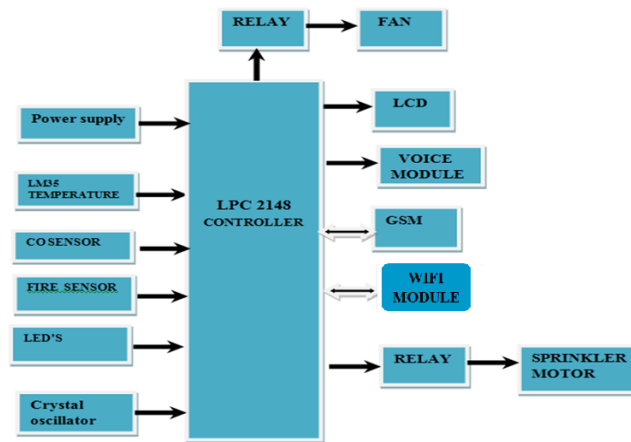


Figure.1.1 Block Diagram

2 Literature Survey

This framework will be projected for “the fire identification” in the unclear logic of vehicle. The kind sensors utilized for fire sensing such as “LM 35, fire and CO sensors square measure”. This technique will recognize fire around 20 sec, and “AC framework” is utilized for the victory of the fireside. The contribution [4] is recommended as a framework for sensing and identifying the fire of forest through the support of “WSN (wireless sensor network)”. The researcher executed how to effort on the information gathered by the sensors instead of fire sensing. For making and processing the power of network proficient for gathered information they utilized a “neural network”. A fire forbidding framework was proposed based on the processing of video [5]. Distribution qualities of “smoke color square measure acclimated” to identify the outbreak of fire. For procedure of image it requires greatly enhanced resources due to it is taking much time. When it approaches to the plant of the garment, the fireplace must be identified as reasonable on account of garments need aid sensible to fire. The contribution [6] might have been deliberated for controlling and observing by utilizing different sensors such as CO, and temperature for fire sensing and smothering procedure of beginning fire.

3 Existing System

In this present method, substitution is essential for few causes, like failure to meet owner necessities, failure rates of framework requirements, the absence of information, and failure to give substituted fragments on this “fire alarm framework”. In the past framework where the fire might have been identified it would make only the “sprinkler engine and fan ON and also the SMS” will be dispersed to the management. There is a protection problem, which if the management does not exist, then the fire mishap might occur. To deal with these protection problems, the information is saved in the “web server” in that the management will observe from anywhere in the planet.

4 Proposed System

This framework will be able to discover fireplace, as well as we given “false fireplace suspecting framework” to stay away from any cautioning, here we utilize “ARM7” to control [12]. Numerous sensors such as CO sensor, temperature, and fire are utilized, which are associated with ARM7. When the

fireplace will be noticed the framework will immediately send an SMS to the management. Whether the management verifies the fire breaking out then framework might immediately increase the alarm and dispatch a message to the close-by fire unit. The data of sensor will be modernized on the web page. The data is going to be restructured from the authorized framework are frequently available in the web from anyplace in the planet. The voice modular will be on, whether any sensor gets abnormal states. The work [11] presents that on LCD, the awareness about sensors is recognized frequently.

5 Methodology

5.1 Fire Sensors

The “fire sensor” will be easy and compressed gadget, which is utilized for sensing and securing in contrast to the fireplace. It utilizes “IR sensor and comparator” to fire sensing up to 1-2 meters of extending relying upon fire solidity. It comprises of 3 pins, and they are (i) ground, (ii) Vcc, (iii) out. It comprises of led that is utilized as “fire pointer”. For regulating “range adjustment preset” is utilized.



Fig 5.1 Fire Sensor

5.2 Features

- Operating voltage 4.5 volt to 6 volt
- Operating temperature -0°C to 60°C
- Allows identifying flames up to 1-2 meters
- Presence of “Fire indicator led”
- Digital input type
- Digital output type

5.2.1 Temperature Sensor (Lm35)

The temperature sensor will be the “associate IC sensor”, which is utilized the temperature through a connected yield voltage is linearly equivalent to the “Celsius temperature”. It will be a “plus over temperature sensor”. It provides the temperature in “degree centigrade ($^{\circ}\text{C}$)”. There will be no necessity of transformation from “Kelvin scale to Celsius”. Hence it is greater than the efficiency of the thermistor and it is suitable for applications of remote. As represented in figure 5.2, (i) the first pin will be linked to VCC (ii) the second pin will be linked to the “microcontroller input” (iii) the third pin will be associated with the ground. When the temperature will be detecting the readings would provide to the microcontroller.

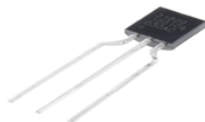


Figure 5.2: Temperature Sensor

5.2.2 Co Sensor

The “MQ2 combustible gas” and “smoke sensing component” identifies the focuses of the gas. It identifies the presence of “carbon monoxide gas”. It will be calculated in “parts per million (ppm)” and its

working range is 0-20000ppm. It has little farm element and it utilizes low power. It will be stable, and it has a long existence. It is accessible in high volume. The “drive circuit” will be enormously straightforward and it has “extensive identifying scope”.



Figure 5.3: CO Sensor

5.2.3 Wi-fi Module [Esp8266]

Wi-Fi module (represented in figure 5.4) is an infrequent price “WIFI microchip”, and it succeeds “TCP/IP stack”. The “Shanghai-based Chinese producers ESPRESSIF frameworks” will be used to generate the ability of microcontroller. It will be low cost, and it has outer portions of the Wi-Fi-module. It maybe inexpensive in volume numerous hackers “square measure” is drawn to investigate “the software, module, and chip”.



Figure 5.4: WI-FI Module

5.2.4 Voice Module

In voice module, the switching will be done among the “traditionalbroadcasting and voice alert broadcasting”. This module is used to check the output circuits, control status indicators, and power. Whereasthe “auto feedback” is fixed then the voice module will transfer the “feedback signal” automatically to the panel while it changes to "fireplace alarm broadcasting". These voice modules are utilized within “the fire alarm frameworks” to give “manual voice messages and pre-recorded messages”. These modules are the unit frameworks, which provide a personal response with the energy to conduct the systematic emigration and appreciate the humans who exist in that location. It will inhabit the one address, and it will be transformed by a “fireplace alarm control panel (FACP) or handled engineer”. It is plugin structure, and it is a "circle powered mode". Once it will be observing yield circuit in energy on state [13], the yield circuit will be short then it will inform fault SMS tothe panel.



Figure 5.5: Voice Module

5.2.5 FAN

It will be an essential part of “fireplace identification and alarm framework”. There are several preparations for interfacing. The “shutdown ventilation fans” in the incident of a fire framework could be arranged. Based on the building region, smoke might be measured. These “smoke control frameworks” incorporate “fire identification and alarm framework”.



Figure 5.6: Fan

6 Flow Chart

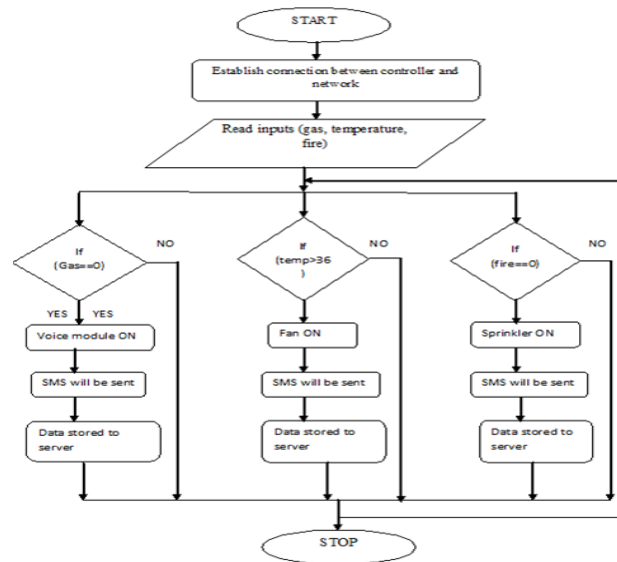


Figure 6: Flowchart

7 Result

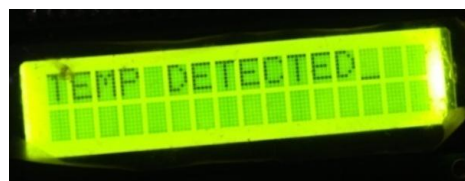




Figure 6.1: Sensor value detected

S.No	S1	S2	S3	S4	Date
161	TEMP_DETECTED				2018-04-09 21:54:35
162	FIRE_DETECTED				2018-04-09 21:42:35
163	GAS_DETECTED				2018-04-09 21:42:06
164	FIRE_DETECTED				2018-04-09 21:41:39
165	FIRE_DETECTED				2018-04-09 20:35:22
166	TEMP_DETECTED				2018-04-09 20:34:36
167	GAS_DETECTED				2018-04-09 20:33:58
168	GAS_DETECTED				2018-04-09 20:08:24
169	FIRE_DETECTED				2018-04-09 20:07:53
170	TEMP_DETECTED				2018-04-09 20:07:13
171	TEMP_DETECTED				2018-04-09 20:03:29
172	TEMP_DETECTED				2018-04-09 19:54:55
173	FIRE_DETECTED				2018-04-09 19:37:54
174	FIRE_DETECTED				2018-04-09 19:34:59
175	GAS_DETECTED				2018-04-09 19:34:12
176	FIRE_DETECTED				2018-04-09 19:17:08
177	GAS_DETECTED				2018-04-09 19:16:36
178	GAS_DETECTED				2018-04-09 19:16:09
179	GAS_DETECTED				2018-04-09 19:15:10
180	GAS_DETECTED				2018-04-09 19:14:39

Figure 6.2: Several sensor values identified it will be presented on the web through the internet of things (IoT)

8 Conclusion

In this manuscript, the current method, which serves to diminish the calamities caused by the fire place has been specified. The whole framework is planned and its quantifiability and efficiency. Whether the sensor methodology is progressed, then the framework could become very beneficial and proficient. In every developed plant, whether this technique will be incorporated fire place mishaps and property successfully will decrease noticeably and because of the terrible disasters, the budget of nation won't be the slip.

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