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# Wireless Notice Board using GSM with Fire Detector

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***Abstract:*** ***This paper uses the wireless technology based on GSM and using it for data exchange and display accordingly on LCD screen. To send and receive messages GSM is used. This system performs three functions: to send and receive messages from the mobile handset interchangeably with GSM; to control an exhaust fan based on the threshold value of temperature (this function can be used in temperature sensitive places e.g. pharmaceutical labs); it can be used as fire alarming system with temperature and humidity display.***

***Keywords: Arduino MEGA 2560, GSM SIM 900A, LCD, Temperature and Humidity sensor (DHT 11), Gas sensor (MQ-6).***

## I. INTRODUCTION

In today's world sharing information and fire safety are one of the important aspects of human race, so this paper aims at both the above mentioned aspects. In our design we have used GSM SIM 900A as the wireless communication device. The GSM is of international standard for sharing information in the form of SMS (Short Message Service). We have used a LCD to display the messages, which are far better than the conventional method of manually putting notices on notice board, which is laborious and time consuming. Here the way of short message transferring information through the mobile phone is ideal as it is convenient, safe and cheap. In the fire safety part of the notice board GSM module is used to send the alarming messages and call to the pre entered number that fire has occurred at some place where the setup is installed. At normal conditions when there is no fire, the current value of temperature of surroundings and humidity in the surrounding atmosphere will keep coming on display on the LCD.

## II. SYSTEM DESCRIPTION

The system consists of a LCD, temperature and humidity sensor, mobile handset, Arduino MEGA 2560, GSM module, keypad, buzzer, gas sensor, relay module and an exhaust fan.

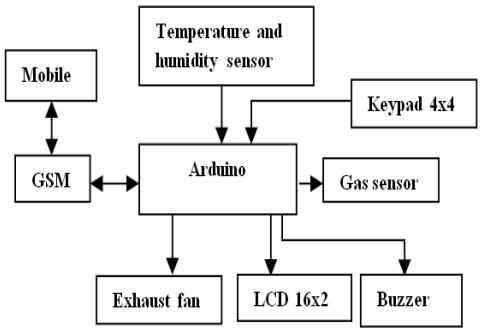


Fig.1. Overall system design

The LCD that is used is a 16*2 alphanumeric LCD. The LCD is connected to the Arduino MEGA 2560 board in parallel. The GSM is connected to the Arduino via transmitter (Tx), receiver (Rx) and ground (GND) pins. The mobile handset is connected wirelessly to the GSM via the phone number that is put in sketch in Arduino IDE. All the peripherals i.e. temperature sensor, humidity sensor, gas sensor, keypad, buzzer, and exhaust fan are connected to the analog and digital PWM pins of Arduino.

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## III. HARDWARE DESIGN

Firstly the GSM module is checked whether the SIM inside in it is initialized or not. There are two parts in the hardware designing-

*A.* For the notice board part the LCD and GSM is interfaced with the Arduino MEGA 2560 and whatever the message one writes from the mobile handset to the phone number of the SIM inside the GSM module will be compared and corresponding action will be displayed on the LCD.

*B.* For the fire detector and temperature controller part the values from gas sensor, temperature sensor, and humidity sensor are continuously checked by the Arduino and when the values taken are above the threshold value decided in the Arduino code, action on the exhaust fan is taken (it is turned on in order to reduce temperature) also when the value of the flame sensor exceeds the threshold a call is placed to the set mobile number indicating that gas has released.

## IV. FLOWCHART

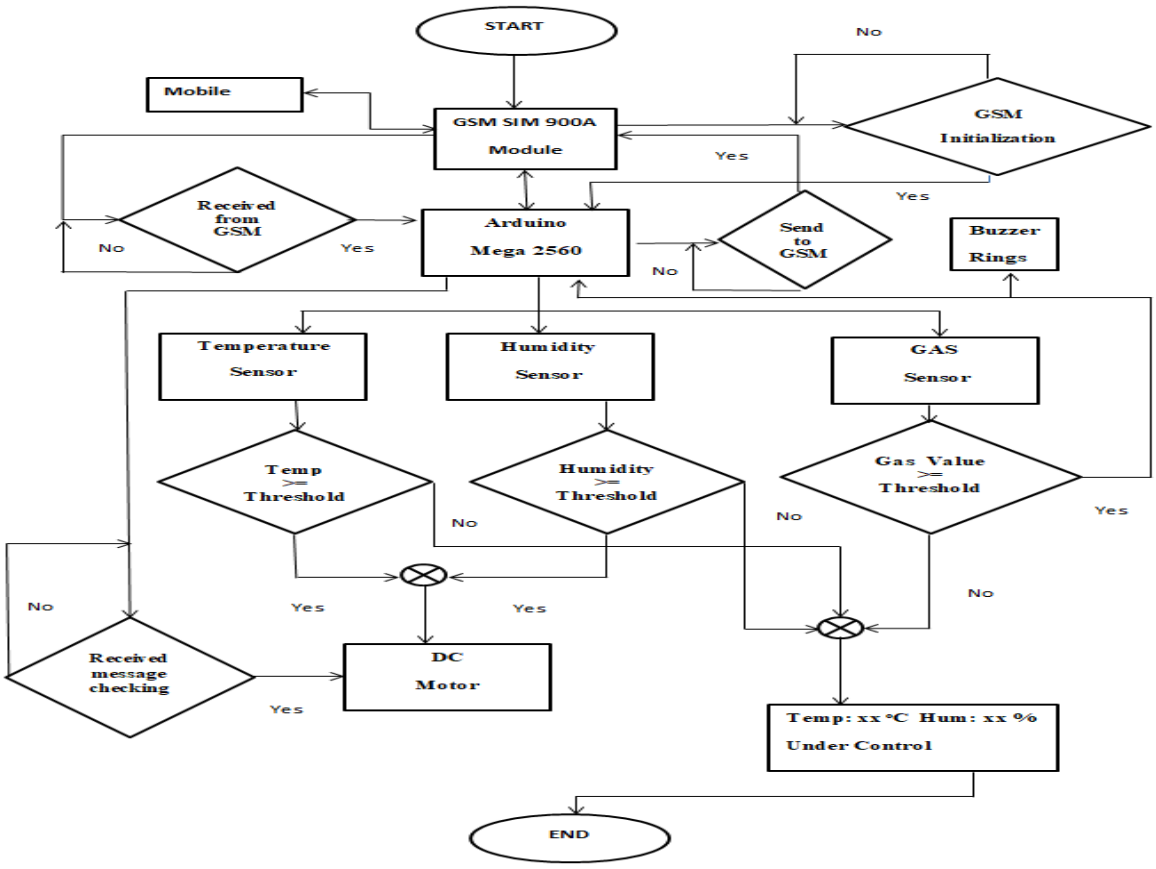


Fig.2. Flowchart

## V. APPLICATIONS

Wireless Notice Board using GSM with fire Detector can be effectively be used in [3] -

*A.* Airports
*B.* Hospitals
*C.* Corporate Offices
*D.* Schools and Colleges
*E.* Pharmaceutical companies
*F.* Detecting fire and alarming system

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## VI. RESULTS

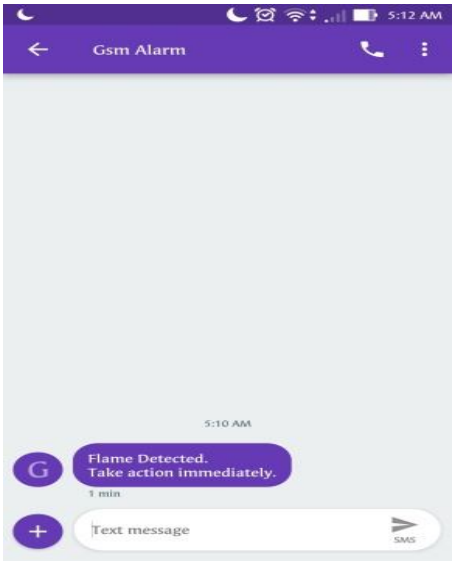


Fig.3. GSM sends the message to the user

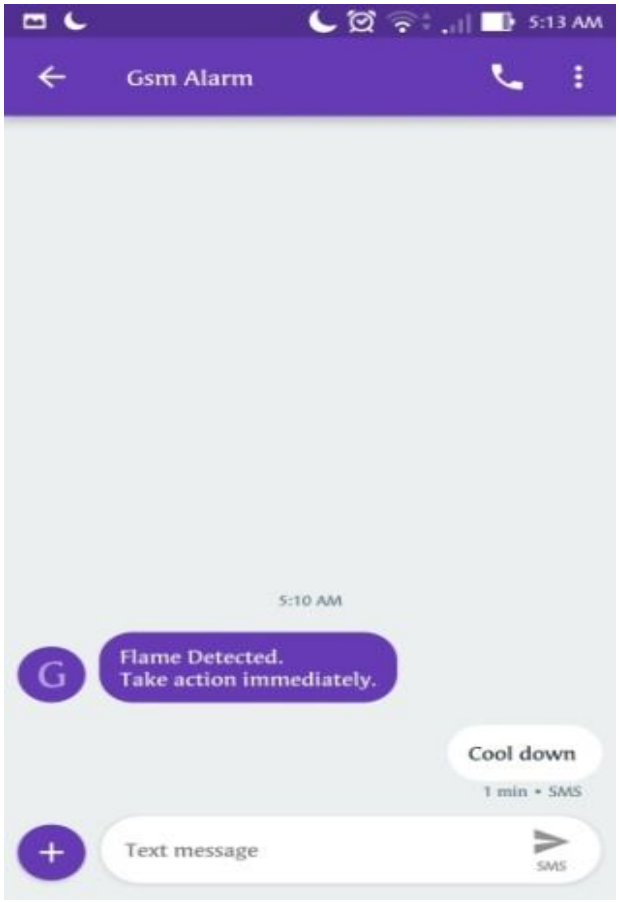


Fig.4. User replies back to the fire safety system

Fig.5. Temperature and humidity display

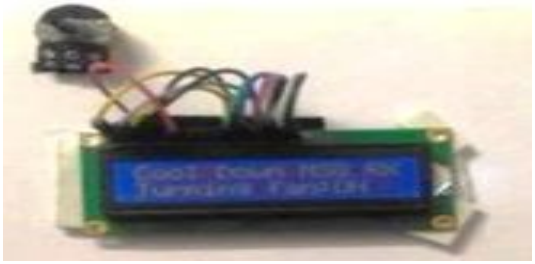

Fig.6. Flame Detection


Fig.7. Message received from user

Fig.8. Action taken by the user

## VII. LITERATURE REVIEW

During the study of many research papers while building this project we came across many ideas and implemented them with the help from references as mentioned below [1] helps us in collaborating the idea of fire safety with wireless means. We was in search of various wireless technologies that we can implement from there we got the idea of Bluetooth, Wi-Fi [2], after that we want that it to be of global coverage so we started hunt for the development done with the GSM technology[4], [7] which enlightened us to use the GSM module. Application is the main focus of the project which we added with Kruthika simha [3] along with D.T. gottuk [8]. As it is related to safety alert system is a necessity which is provided by bharathkumar [6].

## VIII. FUTURE WORK

In the future we plan to install sprinklers in areas where the system is placed so that not only the fire is detected but also turned down. We plan to install buzzers in fire stations along with the location [1] of the area where fire has occurred. Also graphic display [5], [7] will be used to include graphics in the notice. Also multi-user [7] concept will be added.

## IX. CONCLUSIONS

The paper explains how a wireless notice board using GSM along with fire detector was built. The wireless notice board can be used at a number of places like banks, malls, hospitals to display information that will help in saving time and resources. The fire detector part can be used in a fire prone or any other area to detect fire and informing the concerned authority using the call service of GSM. The whole system was cost effective and can be easily understood and used by people. The components used in the project were easily available. The system will prove very helpful in detecting fire and saving lives and resources.

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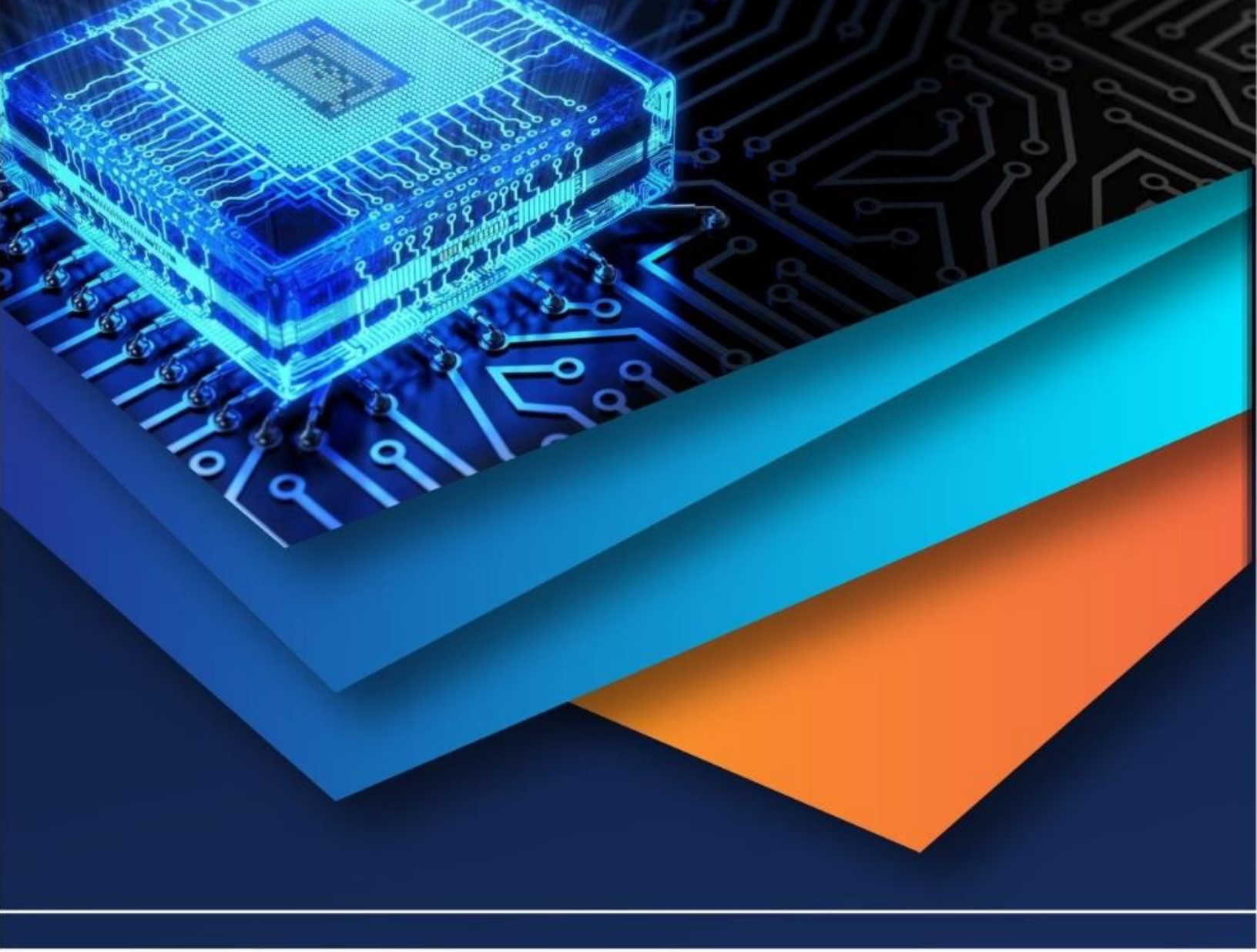

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