INTELLIGENT FIRE ALARM SYSTEM

T.H. FEIROZ KHAN[1] P.ESWAR AKASH[2], ANIRUDH SHARMA[3], and AMAN KUMAR[4]

[1]*Assistant Professor(OG), Computer Science and Engineering, SRM Institute of Science and Technology, Chennai, India*
[2]*Student B-Tech 3rd year, Computer Science and Engineering, SRM IST, Chennai, India*
[3]*Student B-Tech 3rd year, Computer Science and Engineering, SRM IST, Chennai, India*
[4]*Student B-Tech 3rd year, Computer Science and Engineering, SRM IST, Chennai, India*

ABSTRACT

The primary purpose of fire alarm system is to provide an early warning of fire so that people can be evacuated & immediate action can be taken to stop or eliminate of the fire effect as soon as possible. Fire is a kind of disaster threatening the social wealth and humanity's safety. Fires usually occur in homes because of carelessness and changes in environmental conditions. They cause threats to the residential community and may result in human death and property damage. In this alarm system alarm can be triggered by using detectors or by manual call point (Remotely). To alert/evacuate the occupants siren are used. Traditional fire detection systems' intellectualized degree is low, the error alarm and the leakage take place frequently. To reduce the rates of alarm error and leakage of the fire alarm system, a fire detection system model and calculating model of fuzzy neural network for processing fire signal are proposed based on the characteristic of fire detection signal and the requirements of fire detection system. The suggested technique in Fire alarm system use the addressable detectors units besides using the wireless connection between the detector in zones as a slave unit and the main control unit as the master unit. The system shall include a control panel, alarm initiating devices, notification appliances, and the accessory equipment necessary for a complete functioning fire alarm system. In the wireless fire alarm, individual units are powered by primary & secondary batteries for the communication.

I. INTRODUCTION

This is the design and implementation of Fire alarm / smoke detector . This system was design to automatically detect fire or smoke and triggers the alarm and the water sprinkler if not reset by the user. The design makes use of a microcontroller to control the outputs when it receives input from the transducers. This design can be used in different areas like the hospitals, schools ,environment and in banks etc. The suggested technique in Fire alarm system use the addressable detectors units besides using the wireless connection between the detector in zones as a slave unit and the main control unit as the master unit.They cause threats to the residential community and may result in human death and property damage.To alert/evacuate the occupants siren are used. Traditional fire detection systems' intellectualized degree is low, the error alarm and the leakage take place frequently.

II. RELATED WORK

The fire alarm system should have more high anti-interference ability to the fire alarm control panel shall receive 220 VAC power, 60Hz, there will be converter circuit which converts the 220 VAC to regulated 12v dc and 5v dc, application suggested system is used for fire sprinkler,sprinkler pre-action deluge and most conventional fire alarm applications, prevent false alarm system. There are four basic types of automatic alarm initiating devices to detect smoke, heat, fire gases and flame[1].Parameters such as temperature and air movement are as relevant to fire detection as the maintenance of the indoor working environment[3].Generally fire detection technologies are divided into two groups, one is vision based that analyses video frames and other one is sensor based fire detection[2].Once the fire is detected the sensors get activated.this information is warning signal in the ships control station are required on warship[5].Heat and smoke detector are the most commonly used fire detection devices[4].To overcome problem of foggy weather and smoke motion analysis is also included in vision based technique to detect smoke accurately[2]. These intelligent system will avoid the dependence on the experience of skilled personnel. Intelligent fire detector are those involving a fair amount of electronic in it self [5]. Network sensor system are seen by observers as an important tech.that will experience

major deployment in the next few year for a plethora of application[4].As compared to the above techniques and approaches intelligent fire alert and escaping is simple, less expensive and effective to handle deceptive fire scenarios. It is also effective for easily fire hazard occurrence detection[2].The features of software developed are: high level language, modularity, detection, transmission, display and alarm. Use of intelligent technique for fire detection are presently being examined and will be implement in near future[5].There are four basic types of automatic alarm initiating devices to detect smoke, heat, fire gases and flame. Addressable detectors shall be connected via transmitted to the control unit where decisions are taken[3].A fire detection system, which will be self monitoring and

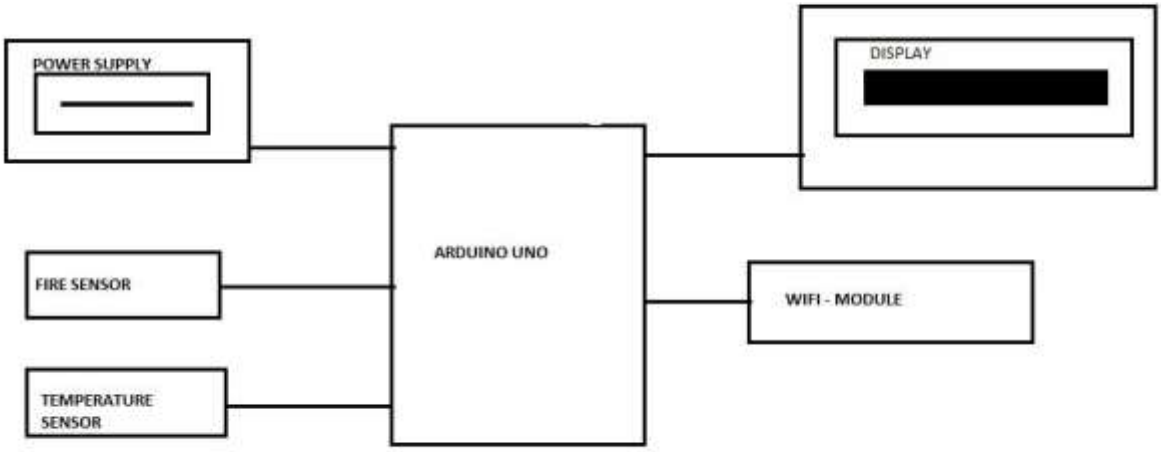

Fig 2.1 Architecture of Fire alarm system

two wire connection such that the connection of the both wire to form a loop in order to provide circuit integrity(as shown in fig 2.1). The addressable system has the advantages that it is addressed system ,easy install, and accurate system[3].

III DESIGN AND IMPLEMENTATION

a.Power supply

This section will give power supply to the micro-controller and other parts of the sensors.

b. Temperature sensor

The temperature sensor will sense the temperature in that particular environment. It will send data to the micro-controller.

c. Fire sensor

Fire sensor detector is a sensor designed to detect and respond to the presence of a fire or flame, allowing for fire and flame detection.

d. Display unit

Display unit will give information about where the fire is detected and give the data which is sensed.

e. Wi-Fi module

Wi-Fi module is used to transfer the data which is collected from the sensors. This data is transfer to other devices like CPU where the decisions are taken.

f. Micro-controller

Micro-controller is main unit of the system where all the codes are stored and all the decision are taken. It will decide weather to activate alarm

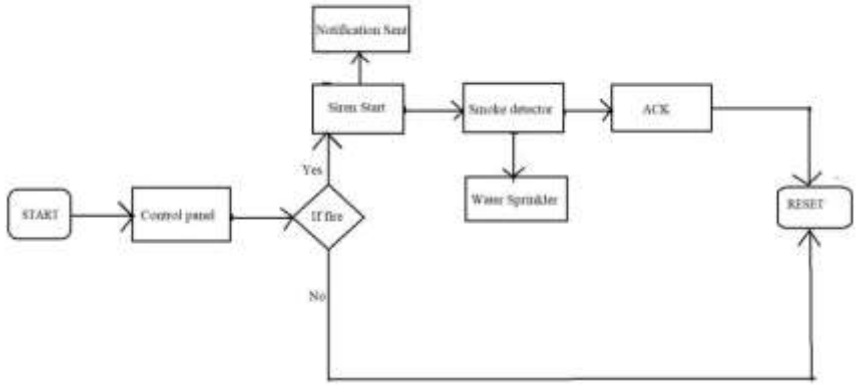

Fig: 3.1 Fire alarm system flowchart operation

IV. CONCLUSION & FUTURE WORK

A fire alarm is a device that detects the presence of fire and atmospheric changes relating to smoke. In some cases, a firm alarm is a part of a complete security system, in addition to a burglary protection system. The fire alarm operates to alert people to evacuate a location in which a fire or smoke accumulation is present. When functioning properly, a fire alarm will sound to notify people of an immediate fire emergency(as shown in fig 3.1). Fire alarms can be found in homes, schools, churches and businesses, and function as the catalyst to saving lives. For most fire alarms, when sounded, a beep, bell or horn noise is made. This distinct sound exists to allow the notification to be heard The fire alarm constructed by this project work is reliable at low cost.

REFERENCES

[1]Hussam Elvehiery of Developed intelligent fire alarm system of American Science journal, issue no. 8, page no.:1016-1025

[2]. Saurabh Joshi, Divyanshu Sharma of intelligent fire alert and escaping system of international journal, issue no. 8, page no:108-110.

[3].Liu, Z.G of development of fire detection systems in the intelligent building of canadian journal, issue no. 12, page no.:561-573.

[4]Pradeep kumar, M.S.Anuradha of Intelligent Fire sensing using wireless sensor network Of International journal, Issue no. 12, Page no : 8868 -8871.

[5] V.B.Pati, S.P.Joshi of simulation of intelligent fire detection and alarm system for warship of Def science journal, issue no. 1, page no.:79-94