A Survey on Implementation of Fire detection system based on Wi-Fi networks

1. INTRODUCTION

In recent times, wireless sensor, wireless communications, wireless control and mobile digital technology became more and more prominent in our daily lives. The wireless communication technology is mostly used in automatic centralized control of building. This paper is focused on a software build with the wireless technology to be handy and applicable for one safety mechanism. The safety mechanism that we are focussing on is fire detection. The designed model shall monitor the fire alarm to long distances thus ultimately helping in evacuation procedure as well. Modern firesafety mainly focuses on fire alarm. However, the control centre can't take proper evacuation and response in time. The existing system has disadvantages that it cannot connect to all existing devices in that particular area where fire has taken place and also that the monitor is not connectedto a central main server. Therefore, this design is for transmitting the fire information to long distances within the building by using Zig-Bee Wi-Fi network and the detected signals are sent to monitoring centre by Wi-Fi network, which connects with personal terminal easily.

2. LITERATURE SURVEY

A number of existing models were studied and their effectiveness was compared.

- **Ahmed Imteaj et.al.**

  He Studied the problems faced by factory workers in times when fire breaks out. They proposed asystem using Raspberry Pi 3 which is capable of detecting fire and providing information about area of fire. The Raspberry Pi controls multiple Arduino boards which are connected with several motors and cameras to capture the fire incident . In this, they discussed about the modern technology that can be used to reduce extremely unfortunate accidents caused by fire. We designed the whole system and calculated its effectiveness.

- **Ondrej Krejcar**

  He proposed a model for location enhancement and personnel tracking using Wi-Fi networks. In this, he has represented the control system concept that is used in handling information of location and control unit operations. The location of the user present in the

building, is obtained through Wi-Fi access points . We have studied this to understand the usability of the Wi-Fi networks in live tracking and then have utilized this functionality to track fire and give information about location of fire to various devices intimating people about the mishap

- **Karwan Muheden**

  He have studied the safety features in home and industrial areas. They have designed new modelusing WSN. Not only have they incorporated temperature and humidity sensors but alsoincluded fire and smoke sensors while developing the model. They present a preceding study of WSN is able to detect fire alarm. It is for setting up a wireless sensor network with three sensors. An application was developed for getting home information.

- **Azka Ihsan Nurrahman, Kusprasapta Mutijarsa**

  They have proposed a prototype for a centralized management system for homes or offices whichhelps better in managing the safety features. In this, home management system is required. This system controls the room lights by turning on and off automatically, it keeps the record of use of electronic device status, turning on and off the ac regulator automatically, it displays the room temperature in home. If fire is detected in the house, it turn on sprinkler at home, it supervises at home via surveillance cameras, take photos and store them including recordings of surveillance at home, it detects the movements of people at home, and provide notification when someone enters the house.

3. EXISTING SYSTEM

After doing the literature survey we have listed some of the features that are existing in the

nowused fire alarm systems. The features of the existing system are as under.

- Identify status periodically - The system checks for a fire at particular intervals and not continuously or not in real time. This is a drawback as there will possibly be a time lag between theactual fire incident and when the fire will be reported due to periodic identification.
- Manual operation for transferring information Automatic operation is not facilitated in

the present systems.

- Not able to find the pressure point of the building which are likely to catch fire easily.

- Difficult to sense structural damage
- MEMS are used to get axis of the building block.

4. References

[1] Ahmed Imteaj, Tanveer Rahman, Muhammad Kamrul Hossain, Mohammed Shamsul Alam, Saad Ahmad Rahat, "An IoT based fire alarming and authentication system for workhouse using RaspberryPi 3" , International Conference on Electrical, Computer and Communication Engineering (ECCE),
 IEEE, 2017

[2] Karwan Muheden, Ebubekir Erdem, Sercan Vançin, "Design and implementation of the mobile fire alarm system using wireless sensor networks", 17th International Symposiumon ComputationalIntelligence and Informatics (CINTI), IEEE, 2016

[3] Azka Ihsan Nurrahman, Kusprasapta Mutijarsa, "Intelligent home management system prototypedesign and development", International Conference on Information Technology Systems and Innovation (ICITSI), IEEE, 2015

[4] Liu Yunhong, Qi Meini, "The Design of Building Fire Monitoring System Based on ZigBee-WiFiNetworks" , Eighth International Conference on Measuring Technology and Mechatronics Automation, IEEE, 2016, pp-733-735

 [5]Ondrej Krejcar, "Using of mobile device localization for several types of applications in intelligentcrisis management",5th IEEE GCC Conference & Exhibition, IEEE, 2009