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APPLICATION OF LIFI IN WIRELESS SENSOR NETWORK A SURVEY

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Abstract: *The current world is approaching towards virtualization of different types of systems that enables performing activities without direct physical inter-action. The combination of high-speed internet and intelligent devices makes it easier to manage multiple jobs smoothly without the limitation of distances. The outstanding advantages of these promising technologies require the deployment and utilization of proper methods to handle the difficulties arise with these new applications in the real world. This paper proposes an efficient low cost supervisory system for smart home automation that can be managed using LiFi Technology. The proposed system is based on LiFi technology and will help to monitor home status with different sensor and control the status if any changes happen through a supervisory system in a most efficient and reliable manner. The proposed system can monitor home condition such as temperature, gas leakage, light intensity and control the home condition with such detection. This system should be useful in home, industry, in organization of monitoring status of such areas as well as controlling changes happen in status of such area.*

Keywords: *LiFi(Light Fidelity), LDR(Light Dependent Resistor), WSN(Wireless Sensor Network)..*

1. INTRODUCTION

Li-Fi is transmission of information through brightening by removing the fiber from fiber optics by sending information through a LED light that differs in force speedier than the human eye can take after. Li-Fi is transmission of information through enlightenment utilizing LED lights, this term is utilized to name quick and modest correspondence framework which is a propelled variant of Wi-Fi or say it the optical rendition of Wi-Fi. At the point when

exchanged the LED ON, advanced 1 is transmitted and when it's OFF, computerized 0, in this way can be turned on and off rapidly. It is additionally conceivable to encode information in light by fluctuating the rate at which the LEDs glimmer to deliver distinctive series of 1s. The force is balanced so quick that the human eye can't see subsequently the yield seeming consistent. Greater headway could radically expand the VLC information rate. Sooner rather than later, the remote innovation is being supplanted by float from Wi-Fi to Li-Fi advances because of the inconveniences offered by Wi-Fi over the incalculable favourable circumstances proposed by Li-Fi. While Wi-Fi is predicated on the accessibility of a microwave flag, Li-Fi can transform any light into a system association working at considerably higher frequencies. Li-Fi additionally offers more protection than Wi-Fi. From this information can be sifted and it can be utilized to control application framework like engine, light et cetera. This framework utilizes distinctive sensors for checking home status and send the home status data to the controller utilizing LiFi innovation. On the basis of this status controlling of home situation is possible i. e gas leakage

2. LITERATURE SURVEY

A research by P.M Benson Mansingh, M.Nithya and M.Krithika et al proposed the home automation system based on LiFi technology. This system consists of two unit one is web server and second one is hardware interface module. Hardware interface module consist of actuator, sensors and controller used for main programming of the system. Server side consist of LiFi receiver interface with server-side PC for data receiving come from transmitter side. Because of using LiFi technology in home automation this system provide faster response than the other system based on other technology such as Wi-Fi.[1].

K.Kalidhas, Jerin Ninan, Jubin Mathew Chacko and Sooraj Saseendran et al proposed system which present initial designs and results of a small-scale prototype of a home automation system and vehicle communication system using light fidelity (Li-Fi) technology. This system consists of two units i.e application section and control section. In the application section DC Motor, Lamp and buzzer, LCD display are connected to the MSP 430, in control section control switch and LCD display are connected. To the application unit LiFi Tx is connected and to the control unit LiFi Rx is connected. Communication between application section and control section is made by using LiFi trans receiver which is faster than the WiFi technology. This paper implements the use of LiFi technology in home as well as in vehicle automation [2]

Alao O.D., Joshua J.V., Franklyn A.S. and Komolafe O. et al describe the Li-Fi technology is advantageous over other wireless technology such as WiFi used for data transmission. Light

Fidelity (Li-Fi) enable transmission of data through illumination by sending data using light emitting diode(LED) light bulb that varies in intensity faster than the human eye can follow. Li-Fi is part of visible light communication that applied to high speed wireless communication. It uses visible spectrum of light which is a part of electromagnetic spectrum, that could transfer thousands of streams of data simultaneously, in parallel at high speeds.

LiFi technology has various advance features than WiFi and we can use LiFi technology in nay application wherever need of data transmission [3].

Hemalata Chavan, Aparna Joshi et al proposed that system with the advancement of technology and in this digital age, wireless communication has reached a new level. Internet being now a basic necessity for living, thus the want faster and more reliable internet has increased over time, as more and more people with their many devices access wireless internet. [4]

Jyoti Rani, Prerna Chauhan and Ritika Tripathi et al proposed that Radio waves are supplanted by light waves in this new strategy for data transmission which is being called LiFi. Light emitting diodes can be turned on and off speedier than the human eye can recognize, making the light source appear to be persistently on. The potential outcomes are various and can be investigated further. On the off chance that this innovation can be put into down to earth utilize, each knob can be utilized something like a Wi-Fi hotspot to transmit remote information and we will continue around the cleaner, greener, more secure and brighter future. The idea of Li-Fi is as of now pulling in a lot of intrigue, not minimum since it might offer a certifiable and extremely proficient other option to radio-based remote. As a developing number of individuals and their numerous gadgets get to remote web, the wireless transmissions are ending up progressively stopped up, making it harder to get a dependable, rapid flag. One of the deficiencies however is that it as it were work in direct line of sight. [5]

Amit K. Mishra, Lalit A. Pawar, Sandeep U. Gaikwad and Gaurav A. Sonawane et al proposed system which gives the application model of Li-Fi Technology. It uses the noticeable light range which is better than Radio repeat go. With the use of LED data can transmit at to a great degree quick. If this development can be put in convenient, each LED handle can be used as like Wi-Fi hotspot to transmit data more secure and safe. [6]

Prof. R.K. Moje, Pawan More, Saurabh Soradge, Rahul Kakde et al proposed the health monitoring system which gives continuously updated health information of patient to doctor using various sensors used to monitor health of patient. The system allows doctors to monitor patient any time and also to consult others. In proposed system Li-Fi Technology is

used to update information quickly and it can be viewed at monitor of the doctor. Simultaneously it also records the data of patient in the CPU. This data can be viewed through the internet for reference while consulting the patient. [7]

3. GENERAL DISCUSSION AND REVIEW COMMENTS

Sr No.	Paper Title & Author Name	Advantages	Disadvantages
1	P.M Benson Mansingh, M. Nithya, M.Krithika, "Li-Fi Based A New Automation System"	The proposed system is scalable, flexible and low of cost than the commercially available home automation systems.	System only provide home automation using using LiFi.
2	K.Kalidhas, Jerin Ninan, Jubin Mathew Chacko, Sooraj Saseendran "Implementation of Li-Fi Technology for Home Automation and Communication"	System provides home automation and vehicle communication.	System will not work when their is darkness in day.
3	Alao O.D., Joshua J.V.., Franklyn A.S., Komolafe O. "Light Fidelity (Li-Fi): An Emerging Technology for The Future"	Li-Fi promote better bandwidth, efficiency and security than Wi- Fi.	LiFi only work only where their is presence of light.
4	Hemalata Chavan, Aparna Joshi, "Li-Fi (Light Fidelity): The Future Technology in Wireless Communication"	This technology has brought not only greener but safer and cheaper future of communication.	System will not work when their is darkness in day.

4. OUTCOME OF LITERATURE

The literature survey includes the previously developed system's summery. Previous system uses LiFi technology but in different application. LiFi in wireless sensor network system uses the LiFi technology in controlling the environmental parameters. This system implementation made easier using arduino uno atmega328 controller. This system provides fast response, cost effective, data transmission using LiFi technology so it has various advantages than other wifi technology.

5. CONCLUSION & FUTURE SCOPE

The proposed WSN system, which incorporates Li-Fi module in a Arduino uno Atmega 328, has been successfully implemented. The use of the Li-Fi module made the wireless transmission of the meter data possible. The transmitted data were received by the Server

LiFi and controlling of home appliances is done by checking current status of home condition i. e temperature, gas leakage, intensity of light.

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