

Online Web Server Management System Using Li-Fi Technology

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Abstract— This paper focuses on using Li-fi technology in an online web server management system using Visible Light Communication system which is based on using of LED lights, their ability to behave at multiple degrees of freedom helps them operate in different ways by using multiple hopping technology. We are proposing an idea to use Li-Fi technology for the purpose of sending in more data at greater bandwidth using a server, processor and GPS/GSM device. The idea is that we use Li-Fi which enables in sending data at a greater speed from a user module to the destination work module, we use two modules where the lifi is connected to computer systems connected to a server and a GPS/GSM network. The focus of our work is to know how by using lifi, information can be sent and received by multi-hop wireless networks and that easy communication occurs between the user module and the work module.

Index Terms— Li-Fi, Visible Light Communication, GPS/GSM, LED.

1 INTRODUCTION

During this modern times of wireless technology which is been used commonly for the transfer of data from one place to another place is one of the most important day to day activities, number of devices accessing the internet is becoming greater every time. This has led to the networks becoming clogged, the transfer of information has become slow and the risk of interference of outside frequencies, hence there is a need to have communication that is fast reliable and error free.

Currently exists the Wi-Fi Technology. It allows computers, some mobile phones, and other devices to communicate over a wireless signal. The router is the key piece of equipment in a wireless network. Only the router is physically connected to the internet by an Ethernet cable. The router then broadcasts the high-frequency radio signal which carries data to and

from the internet. The adapter in whatever device you are using both picks up and reads the signal from the router, and also sends data back to your router and on to the internet, an upstream and downstream activity

To make up for the Wi-Fi disadvantages a new system is used called Light-based wireless communication, coined as **Li-Fi**. It is a method of internet connectivity which doesn't use cables or radio waves, instead flickering light from a special LED to transmit data just like your Wi-Fi adapter. It uses visible light instead of Gigahertz radio waves for data transfer.

This optical wireless technology provides remarkable connectivity in a localized environment. In this technology radio waves are replaced with visible light as the carrier. Data can be transmitted through LED light whose intensity varies rapidly. It is possible to encode data in the light by varying the rate at which the LEDs flicker on and off to give different strings of 1s and 0s. The LED intensity is modulated so rapidly that human eye cannot notice.

The LEDs can be switched on and off very quickly, which gives nice opportunities for transmitting data." So what you require at all are some LEDs and a controller that code data into those LEDs. We have to just vary the rate at which the LED's flicker depending upon the data we want to encode. Further enhancements can be made in this method.

A networking solution cannot be known without a multiple access scheme that would allow many of the users to share their communication without any mutual cross-talk.

This technology can be the future for the transfer of information, where data will be transmitted using light and that security of data would not be a problem as the data cannot be accessed easily

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2 BLOCK DIAGRAM

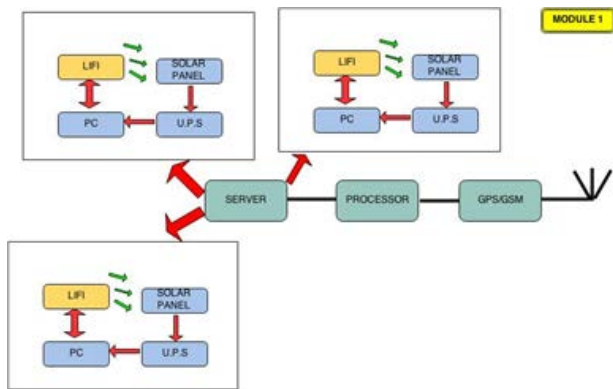


Figure 1

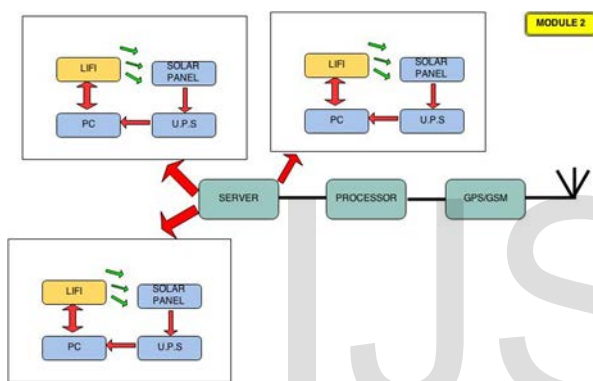


Figure 2

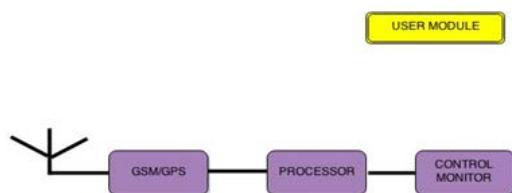


Figure 3

The basic idea behind this communication scheme is transmission of 'Data through illumination'. The

Intensity of the LEDs is varied by changing the current passed through them at very high speeds. However,

The human eye cannot perceive this change and the LEDs appear to have a constant intensity. This ON-OFF activity of LED lights enables data transmission using binary codes i.e., when the LED is ON, logical '1' is transmitted and when the LED is OFF, logical '0' is transmitted. This method of using rapid pulses of light to transmit data is called Visible Light Communication.

We have done in three modules, the first module consists of the server, processor, GPS/GSM which is connected to an antenna where various Li-Fi boxes are placed around connected to the devices shown in Figure 1, and the Li-Fi network where by using the source of light in a room can be used, the information is stored onto a server where the information is processed and given to the GPS/GSM network where it can be transmitted to another user where the information is secure and not vulnerable to data theft.

The Module two is also similar to Module one but that some personal computers are connected to the Li-Fi box where the information is given by the computer and that by using Li-Fi network data can be sent and processed.

The User Module is basically the Control Module where it acts as a control room where using the control monitor is used to control the data flow in and out using GPS/GSM module storing the information in the server.

For the Li-Fi communication, full duplex communication will be required that is an uplink connection will have to be provided for the devices to be connected.

Here using the Transmission Control Protocol (TCP)/IP provides reliable ordered and error-checked delivery of a stream of octets between programs running on computers connected to a local area network.

If you see in the past the wireless communication at the cellular level has improved due to reducing the distance of inter cellular base stations, usually small cellular cells are used to improve the frequency range, these cells which are called atto-cells provides continuous data coverage providing uniform data illuminance, the unique properties of optical radiation, however, offers some specific opportunities for enhanced interference in optical attocell networks and that light cannot penetrate through walls and that which would allow interference to be managed in an effective manner. The realization of a bidirectional connection also seems to have been addressed successfully to an extent that the first commercial bidirectional point-to-point Li-Fi systems are available.

In addition to this system light from the Li-Fi is fed to the solar panel which gets powered and the energy is stored in the U.P.S which is given to the computer

Based on promising results, Li-Fi is rapidly emerging as a powerful wireless networking solution to Wi-Fi as communication channels can be clogged, and that Li-Fi is an enabling technology for the future Internet-of-Everything.

3 CONCLUSION

Li-Fi has great potential in the field of wireless data, transmission. The concept of Li-Fi is currently attracting a great deal of interest, not least because it may offer a genuine and very efficient alternative to radio-based wireless. As a growing number of people and their many devices access wireless internet, the airwaves are becoming increasingly clogged, making it more and more difficult to get a reliable, high-speed signal. Here we were able to present an online web management system using the Li-fi Technology, and that we are in future will be able to change the polarization angle to about 360 degrees to get a connection from the device at any location and that

rather than using multiple Li-fi boxes only one would be enough

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