

LI-FI THE BEST ALTERNATIVE TO OVERCOME THE EXISTING TECHNOLOGIES

S.VICKY

UG Scholar , Saveetha School of Engineering, Saveetha University
Department of Information Technology

Abstract: In this upcoming world, Li-Fi is playing a great role in the communication field. Li-Fi stands for Light Fidelity. In Li-Fi, the data can be transmitted through LED light. Li-Fi might be used in approximately each site where system prohibits the uses of Wi-Fi. The downside of Li-Fi is that light-weight cannot tolerate the objects, consequently if the receiver is unknowingly blocked in any manner. To overcome this we are using many existing techniques. Visible light will also be used, in which Li-Fi provides wireless covered and enclosed contact. This is the best technique. Visible Light Communication (VLC) is a kind of method which can also be used for this purpose. Visible light communication (VLC) make use of the fast pulsation.. So the utilization becomes more and the work gets finishes at a low rate or we can say this is the best technology.

Keywords: Network technology, Li-Fi, Visible light communication (VLC), Wi-Fi, LED.

1. INTRODUCTION

Li-Fi in the knowledge based tentative part basically known as light fidelity. Li-Fi is the advanced feature of Wi-Fi. In Li-Fi visible light is used and in Wi-Fi gigahertz radio waves are used. The fundamental principle at the back of this method is that the information and the facts must exist convey through the Light Emitting Diode which is also called as LED light. The intensity of the LED light is faster than any other method. It is a 5G, observable light communication arrangement. Visible light will be used as medium in which we can spread the communication more longer. Li-Fi has many advantages and can also be used in electromagnetic-based insightful materials and responsive fields such as in air-based machines, nuclear-based equipments etc.

Optical wireless equipment occasionally called VLC. It is a rapid and an inexpensive wireless communication organization. In general conditions, Li-Fi can as well as work even under water in which origin a huge reward for the military purpose. Li-Fi might be used in approximately each site where system prohibit the uses of Wi-Fi: aircraft cabins and hospitals and that light is not affected by the spectrum regulations that govern how radio frequencies can be used. How the Li-Fi is designed means, it must be prepared anytime to overcomes the difficulties and the drawbacks that occurs with Wi-Fi.



Fig:1 Li-Fi technology

Li-Fi technology which is shown in fig:1 might be used in approximately each site where system prohibit the use of Wi-Fi: aircraft cabins and hospitals and that light is not affected by the spectrum regulations that govern how radio frequencies can be used.

RELATED WORK:

The good plan was 1st introduced by Mr. Harald Haas in his plug-ugly world speak on the topic called Visible Light Communication . His intension was to make everyone clear and made them to understand the terribly straight forward problems and solution behind it. When the crystal rectifier is taking place you can convey a digital one, if it is in the rancid state you can convey only zero. The Light Emitting Diodes can be often toggled both on state and off state terribly. Radio signals can also be said as data-line signals which can be restored by the light-weight effects of the signals during the new technique of information communication takes place in the Li-Fi. LEDs will be switched in the on state or can also kept in the off state quicker than any other object will sight, inflicting the sunshine supply to have a look to the air ceaselessly. Flicker can be used which is a light-weight, it will be improbably irritating, however it has been clothed to possess the upper side, which is being exactly makes the light doable to use such a light-weight for wireless information communication [1].

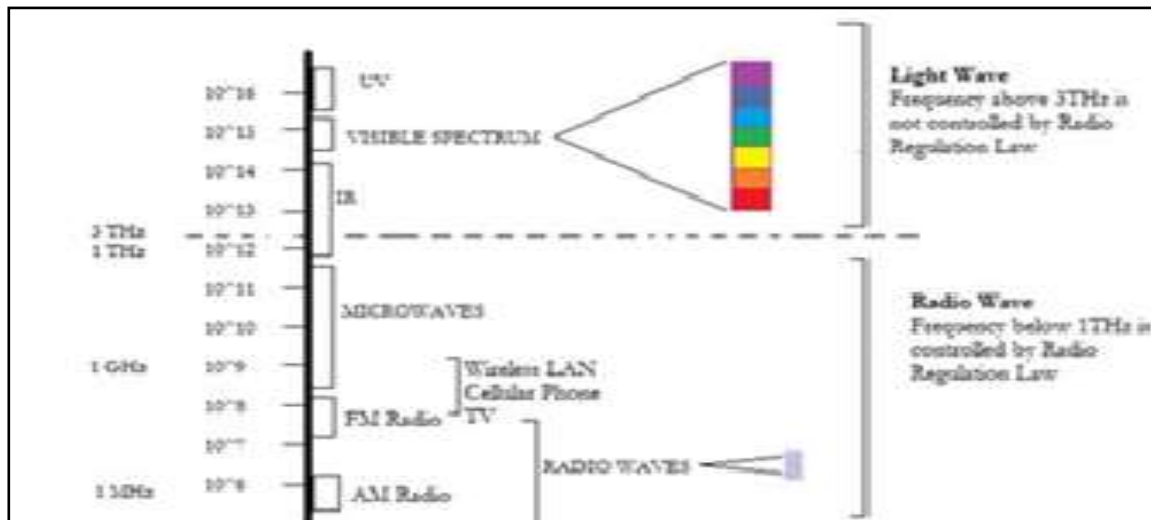


Fig:2 Light wave and Radio wave Frequency spectrum.

Fig:2 shows that light wave holds the data which is working in a faster method, but in radio wave the data convey rate is measured.

We can also consider that Li-Fi is an attentive light-based Wi-Fi. The utilization of the light-weight rather than radio waves is used to convey and pass out information. Relatively in the Wi-Fi modems, the Li-Fi connection would uses some particular semiconductor diode lamps that are made of light-weight. So an area also as transmit and receive info. From the time when it became to use easy light-weight bulbs, there will be officially ranges in the contact position. This type of equipment widely uses an region of magnetic attraction range which remains is never really used to a great extent. Light is the truth which is to be told noticeably a part there thousands of voluminous years and have not sick impact. Besides at another hand there are 10000 moments remains in the room offered during this type of range and simply looking forward to the bulbs in use and bring in the competitive portion , it conjointly multiplies times additional and also further accessibility [2].

Li-Fi has the benefit of having the capacity to make the most of in insightful areas like in craft while not inflicting obstruction in such areas. though, the sun ray used cannot penetrate or break in the wall,. This can be the main downside envisioning the implementation of this technology. This technology is mainly used to transfer many flows. At the same time, in equivalent, in superior velocity with the help of specially modulated tone, employ distinguishing signal indication progression knowledge. A doable answer of this downside is that the replacement all the lights by the semiconductor diode lamps. Since the lamp generates the information signal yet because it is additionally used for the lightening. however size of the lamp is larger than standard bulbs. This describe methodology of sending information through Li-Fi

technology, varied element used, the benefits of this technology over the opposite presence methodology of knowledge transmission, the difficulties featured throughout implementation and their doable answer [3].

Li-Fi will attentively participate a serious position in reducing the significant masses that are present in the wireless communication systems which has to be replaced and does not make the most use of the information which measured by light were presently obtainable radio waves for information transformation. Li-Fi technology can be used for the future wherever laptops, good handset, mobiles and tablets which are used to convey through the beam during the space. Being safe is not a difficulty as a result of if you cannot see the sun rays, as a result we cannot access the information. Still, the Li-Fi may appear and come out like a advantage for the quickly reducing the information measure of data line signals. This will definitely appear as a primary option or an alternative intended for using the net during a restricted or in the limited space at a low-priced value. By means of beginning a part of Li-Fi, at present it has made that it is not compulsory to be in the direction of a state which is Wi-Fi facilitated to keep contact with the internet or any other network [4]. We can even establish an optical wireless communication model that provides high knowledge rates (in the order of MHz) and transmission distances of up to 1m. This model ought to effectively be able to transmit knowledge from one device to a different mistreatment LEDs, thereby establishing a Li-Fi network during a localized setting. In Road Safety and Traffic Management Li-Fi is used for communication between the semiconductor diode lights of vehicles therefore on avoid collision. It can even be enforced within the traffic lights for vehicle to margin communication to update traffic info. Any personal or public lighting as well as street lamps is wont to give Li-Fi hotspots. This encompasses a two-in-one advantage of lighting moreover as wireless communication and knowledge transfer [5].

Visible light communication (VLC) make use of the fast pulsation of sun rays to transmit information wirelessly. It cannot be detected by human eye. By the development of this upcoming technology in the world, a one-watt LED lightweight bulb would be enough to supply internet property to four computers. So the utilization becomes more and the work gets finishes at a low rate or we can say this is the best technology. The most part of particular communication is, it may be a elevated intensity LED. So by doing modulation, the Light Emitting Diode can do clarification which can be used in the communication supply. There are reasons to like LED because the light is the visible radiation communication system whereas plenty of options illuminate the devices like lamps, incandescent bulbs etc. are elsewhere present [6].

The work can be even done underwater wherever Wi-Fi fails fully, thereby heaving the open never-ending opportunities for military operations and further processes. Imagine exclusively longing for to hover underneath a streetlight to induce public web or download a moving picture from somewhere else. There is a replacement technology, that may, slightly virtually further developing property and also increases control over it. Radio waves are put back by the light-weight influence during an exceedingly innovative technique in the information communication. That can be even referred to as Li-Fi. technique of victimization fast pulsation which belong to the sun rays, that send out information wirelessly is stated as actinic ray Communications. Radio waves are not only used in such technologies. Moreover it is used in wide-range of radio signals, far-away distance in the villages and also the remote planets [7].

2. PROBLEM STATEMENT

The main drawback of Li-Fi is that light-weight cannot tolerate the objects, consequently if the receiver is unknowingly blocked in any manner, then the signal can straight off or shot cut out. So as a result the communication breaks out. In case if the sunshine signal is blocked, or once we got to use our device to send information we have to seamlessly switch backside over to non-particulate radiation responsibility and network coverage area unit the main problems to be thought-about by the businesses whereas providing VLC services. It has the possibilities of making the entire network and communication to be crashed and entirely stops working. his may cause interruption within the communication.

3. HOW LI-FI IS DIFFERENT FROM OTHER SOURCES?

Li-Fi technology basically relies on LEDs because in need to transfer of particular and better information. The transferred information may or may not be with the assistance of every kind of sun ray, That is, it can be explained as the sun ray will belong to the invisible, ultraviolet or the visible a part of the spectrum and can be so any range.

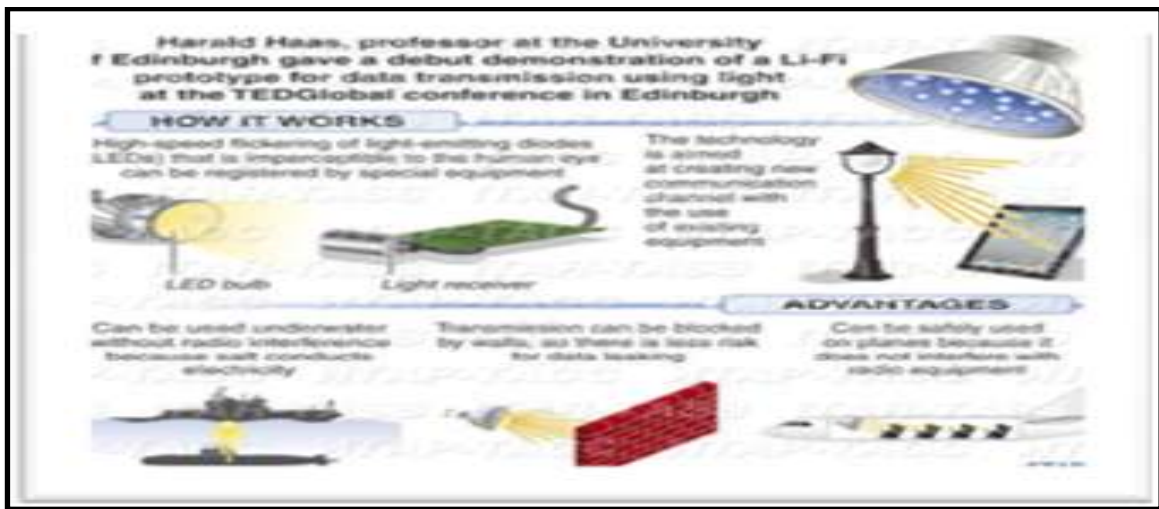


Fig:3 data transmission using light

Also, the speed of the web is unbelievably high and it is very easy to transfer movies, games, music etc in a very efficient way. The technology is ready to remove the limitations which are currently placed in the Wi-Fi communication. Fig:3 shows the data communication using the light. You know a lot of ought have the region that is Wi-Fi facilitated to possess the web connection. There is a possibility that we can merely set below the huge variety of lightweight and also we need to side the web and collect the useful things from it, because an association can be created just in holding the lightweight occurrence. No other Technology in the world can be higher than this.

Table 1.assessment among current and future outlook of wireless technology

Technology	Speed	Data Density
Wi-Fi–IEEE-802.11n	150 Mbps	*
Bluetooth	3 Mbps	*
IrDA	4 Mbps	***
Wireless (future)	It is the future of the computer world.	
WiGig	2 Gbps	**
Giga-IR	1 Gbps	***
Li-Fi	>1Gbps	****

Table:1 shows you the better knowledge about the current as well the future wireless technology. In future we even have a chance to use optical technology commonly.

4. PROBLEM SOLUTION

Li-Fi may be a new model for optical wireless technology or the superior knowledge to create unexampled possessions inside a limited small area for the particular situation. Rising orders are designed for superior bandwidths, is to access quicker and safer information transmission additionally as environmental and doubtless human friendly technology.

Li-Fi will take in not only for lighting services but moreover a world of fresh and awesome pioneering services and out coming best results. The lighting service makes further accurate results for the wireless data communication The best solution is that, we can make the environment Mercury free and utilize it in the safe manner. With this Mercury environment we can even generate a new technology all over the world.

5. FUTURE APPLICATIONS AND CHALLENGES OF Li-Fi TECHNOLOGY

In future, it will be used in hospitals, overseas, streets, petrol bunks traffic signals and also it will be effectively used in medical instruments in a very safer way.

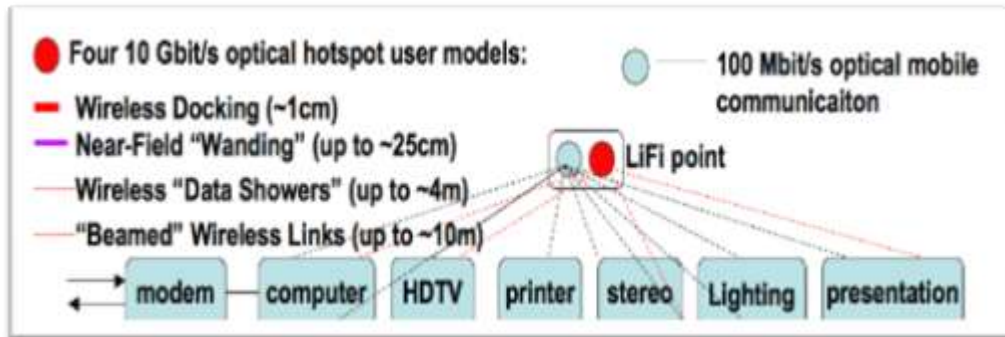


Fig:4 Wide uses of Li-Fi

As shown in the Fig:4 many equipments or many things can access the service from a single Li-Fi point. when we move to challenges of Li-Fi, we have to think how will the receiving mechanism will pass on reverse to the transmitter source which is one of the major challenges for Li-Fi technology and the another challenge is Li-Fi should be made possible to penetrate over the walls as the Wi-Fi technology does.

6. CONCLUSION

Li-Fi is a technology uses the Light Emitting Diode light which is the advanced feature of Wi-Fi. It help to convey the data faster and stretchable manner from beginning to end through the Wi-Fi. Li-Fi will brings lighting and has a tremendous usage all over the world. Li-Fi might be used in approximately in the region where the entire system prohibit the uses of Wi-Fi. Using this type of technology we can even use it in the Long-range radio signals enable astronauts to communicate in a better way with a better communication. Li-Fi technology does the system to speed up the usage of web unbelievably high and it is very easy to transfer movies, games, music etc in a very efficient way when compared to Wi-Fi. Thus Li-Fi technology must be improved more in the range of providing the best services even in the far-away and remote places and for future uses and applications based on Li-Fi must be clearly defined.

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