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A Review Paper on Light Fidelity Network

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Abstract: Inside the present technology, wireless is the most trending area. As net users nearly double each year, there may be an sizeable load on radio spectrum that leads to congestion. To get higher bandwidth, efficiency and speed, a new technology li-fi has developed. Li-Fi stands for mild fidelity. It is a bidirectional and wireless mode of conversation the use of light. It uses the unused visible spectrum and decreases the weight on radio spectrum. Li-Fi may be in reality positioned to be wireless however rather than radio waves light is used as a medium. Right here, information is transmitted the use of light whose depth varies faster than human eye to seize. Rather than the use of modems, li-fi makes use of led bulbs with transceiver. Facts transmission in li-fi is set 100 instances quicker than Wi-Fi. right here, in this paper we discover the need for Li-Fi.

Keywords: Light fidelity, Optical communication, Hybrid Li-Fi, indoor communication.

1. Introduction

Background Of Light Fidelity (Li-Fi):

In 2006, Professor Herald Haas and his team of researchers paintings inside the discipline of light constancy (Li-Fi). Their paintings to investigate into visible light verbal exchange(VLC) generation. Lots of their studies into using mild as a medium for 2-way transmission of statistics. Li-fi is a Visible Light Communication, seen light verbal exchange, generation advanced by using a group of scientists together with Dr Gordon Povey, Prof. Herald Haas and Dr .Mostafa Afgani on the university of edinburgh.

In 2011, the term li-fi changed into coined with the aid of Prof. Haas when he marveling human beings through streaming excessive-definition video from a widespread led lamp, at ted global. Li-Fi is now a part of the visible light communications (vlc) ,IEEE 802. 15. 7 widespread. Li-Fi is generally applied using white led mild bulbs.

What is Li-Fi?

Li-fi is an Optical Wireless Conversation (OWC) era, which makes use of light from LEDs as a medium to deliver network, cell, excessive-velocity communication in a comparable manner to Wi-Fi. The mild fidelity (Li-Fi). The term li-fi can be notion as light based totally wireless, that is, it makes use of a light instead of radio waves to transmit the statistics. In place of wireless modems, Li-Fi might use transmit and receive aspect equipped led lamps which could mild a room in addition to transmit and acquire information. And this is the parallel conversation. This era uses seen light spectrum inside the electromagnetic spectrum, which is still now not utilized rather than gigahertz radio waves for records transfer and the mild is the gain is a first-rate thing in life which isn't harmful to the human life also it has 10,000 instances more area to be had inside the spectrum.

Li-Fi is transmission of records via illumination via taking the fiber out of fiber optics via sending facts via a LED light bulb that varies in intensity faster than the humaneye can comply with. Li-fi is the time period a few have used to label the short and cheap Wi-Fi communication machine, that's the optical model of Wi-Fi. The time period was first used in this context with theaid of HaraldHaas in his TED international speak on seen light communication. This era is a brand new generation of high brightness Light-Emitting Diodes (LED).

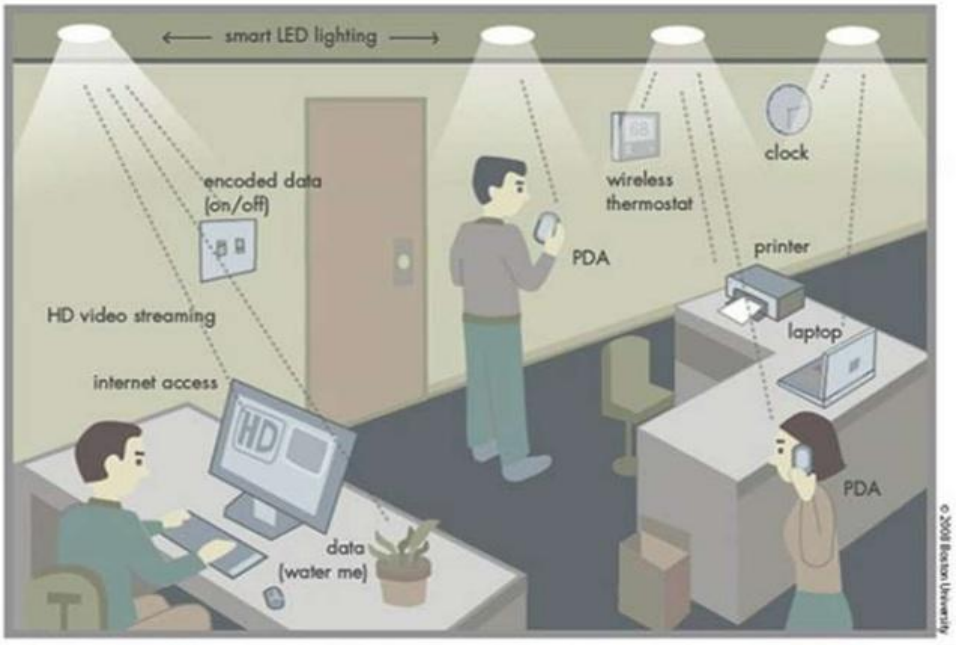
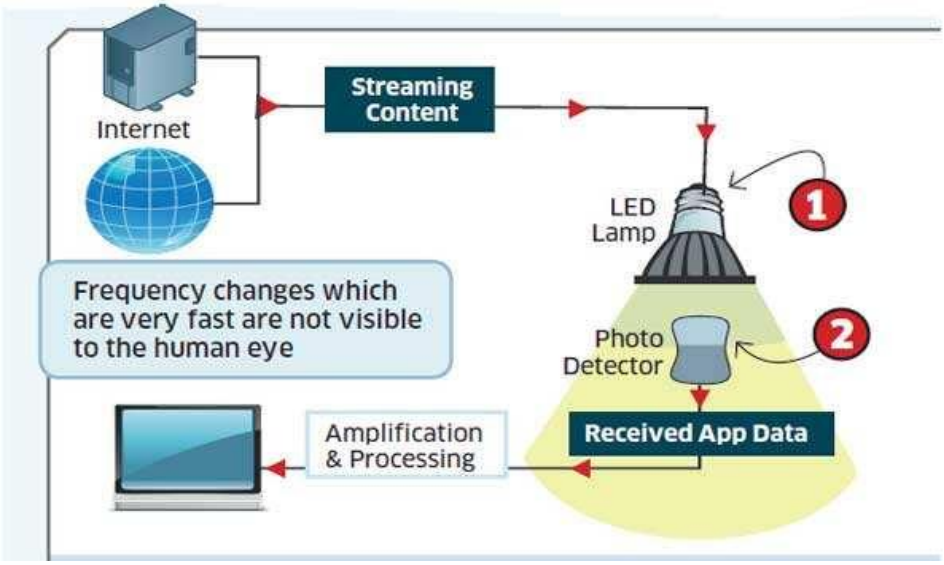


Fig: Li-Fi Environment

2. How Li-Fi Works?

There working of li-fi as following. There are fundamental additives are used: LED mild source & mild sensor (picture-detector). The mild supply is paintings at one quit and detector on another stop.When LED bulb is on it begins sparkling and the light sensor senses the mild from light source and receives alerts in the shape of binary signals i. e. 1 or 0. Whilst some data is transmitted over the network from the net to the consumer tool, it transmits over the network and flashing of LED bulb is a sign of the message after which photo detector feel mild and get hold of the message and ahead to its vacation spot stop as shown in.



- LEDLamp
- Photo Detector(LightSensor)
- End-user Devices (Laptop, Computer, Mobileetc.)
- Optical Wireless CommunicationProtocols(OWC)
- Radio Frequency Signal'sAmplifier
- Line of SightMechanism

More the brighter LED bulb, More frequently data will transmit light signals over the network and highly reliable.

3. Scopes of Li-Fi:

1. Capacity: Li-fi offers with extra bandwidth that is loose and easy to use. It is also unlicensed. Li-fi also provides with greater records density in comparison to that of wireless. The records density is ready 1000 instances than wireless. That is due to much less interference of mild than RF waves. Because of high facts density and bandwidth the output speed is likewise very excessive.
2. Efficiency: The device could be of low value as it requires less number of components. No additional energy input is required for this era and moreover led illumination is already efficient.
3. Safety: It eliminates any fitness risks due to RF waves. Use of light can't intrude with any electronic circuitry and consequently the technology is safe and non-risky.
4. Security:Statistics theft or hacking is negligible as compared to wireless because the variety of facts transmission is restrained to a certain region and visible.

4. Application:

THERE ARE SOME FUTURE APPLICATIONS OF LI-FI :

1. Education Systems: Li-fi is the latest technology that can provide fastest speed Internet access.
2. Medical Applications: Li-fi can be used to accessing internet and to control medical equipment.
3. Underwater application : Underwater communication use of radiofrequencies(RF) and use of sound waves is impractical due to strong signal absorption. Li-fi can be employed in such cases for underwatercommunication.
4. Disaster Management: Li-fi can be used as a powerful means of communication in times of disaster such as earthquake or hurricanes & tunnels, common dead zones for mostemergency communications, pose no obstruction forLi-fi.
5. Traffic Management: In traffic signals Li-fi can be used which will communicate with the LED lights of the cars which can help in managing the traffic in a better manner and the accident numbers can bedecreased.
6. Public internet access through street lamps: It means that the any light able to spread internet using visual light communication which helps us to low cost architecture for ahotspot.
7. Hazardous Environments: Li-fi is a safe alternative to RF communication in environments such as mines and petrochemical plants which are susceptible to electromagneticinterferences.
8. Airplanes: The RF waves can motive interference with the radio of the pilot. So to triumph over this hassle li-fi can be used. Additionally the passengers ought to pay a big amount of money for the "service "of dial-up pace wireless at the plane. Li-fi ought to easily remedy this problem.
9. Radio Broadcast:- A massive amount of electricity is needed via radio masts with the intention to broadcast and this makes them quite inefficient. LEDs however require very low power to perform & which means li-fi additionally uses very little electricity.

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