



A.V.C COLLEGE OF ENGINEERING
DEPARTMENT OF COMPUTER APPLICATIONS
(A Recognized as a Research centre
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I Congratulate all the participants & prize winners who have participated various events in National Level Technical Symposium in Annai College of Engineering & Technology @ Kumbakonam. I appreciate all the faculty members for the successful completion of TANCET 2018 One day Awareness cum coaching programme.

I wish them all success.

Dr. S.SELVAMUTHUKUMARAN.

LiFi TECHNOLOGY

S.Shivasankari - II MCA

Introduction:

Li-Fi (short for *light fidelity*) is a technology for wireless communication between devices using light to transmit data and position. In its present state only LED lamps can be used for the transmission of visible light. The term was first introduced by Harald Hass during a 2011 . In technical terms, Li-Fi is a visible light communications system that is capable of transmitting data at high speeds over the visible light spectrum, ultraviolet and infrared radiation.

Working of LiFi:

The logic behind the working of light fidelity technology is much unmingled. If the LED is on, a digital string '1' is transmitted and when the LED is off then a digital string '0' is transmitted. For example, there is a LED at one end and a photo detector at the other end, whenever the LED is on, a binary '1' and when the LED is off a binary '0' is registered by the photo detector. Thus a message is build up by many flashes of LED.

Many other highly developed technologies can be used I increasing the data rate of VLC, a recent research in Berlin attained rates of 500 megabytes per second. Parallel data transmission where each LED generates a separate data stream and has been focusing on many teams in the University of Oxford and Edinburg.

Advantages of LiFi:

In Li-Fi the data is transferred through the light without depending on the spectrum of light, it may belong to the invisible, ultraviolet, visible portion of the spectrum. It provides the speed up to 1Gbps with the exceptional bandwidth and overcomes the limitations of the Wi-Fi. Few advantages of it are as follows:

- ✓ The transmission of information through it is very cheap and affordable due to the low energy consumption and efficiency of LED bulbs.
- ✓ Li-Fi doesn't provide an issue of availability because in the world there is no scarcity of bulbs and the only thing is that they need to be replaced by LED's for the sending of information or data.
- ✓ A high rate of transmission of information up to 10Gbps can be succeeded.
- ✓ It has less maintaining cost and low implementing cost.
- ✓ Li-Fi provides high security because the light cannot travel or enter the walls and due to this the factor of misuse cannot occur.
- ✓ The issue of insufficiency can be eradicated because Li-Fi uses light which is still not used in abundance.

Application of LiFi:

- In the operation theaters, Wi-Fi is not used because the radiations are hazardous to the patient's health and the replacement of Wi-Fi with Li-Fi makes the operation theaters developed and will be very helpful in performing the robotic operations.
- The radiations of radio waves are genuinely harmful to the people's health and the reduction of its usage might give good health and live longer.
- In air crafts, passengers get retrieve to the low-speed internet with high charges but the use of Li-Fi provides the high-speed internet with affordable charges.
- Li-Fi can be used in underwater remotely operated vehicles, as a means of communication during disasters, in power plants, in traffic management where it could communicate with the lights of vehicle

Disadvantages of LiFi:

- ✓ Internet cannot be used without a light source. This could limit the locations and situations in which Li-Fi could be used.
- ✓ Because it uses visible light, and light cannot penetrate walls, the signal's range is limited by physical barriers.
- ✓ Other sources of light may interfere with the signal. One of the biggest potential drawbacks is the interception of signals outdoors. Sunlight will interfere the signals, resulting in interrupted Internet.
- ✓ A whole new infrastructure for Li-Fi would need to be constructed.

Difference between LiFi & WiFi:

Feature	LiFi	WiFi
Full form	Light Fidelity	Wireless Fidelity
Operation	LiFi transmits data using light with the help of LED bulbs.	WiFi transmits data using radio waves with the help of WiFi router.
Interference	Do not have any interference issues similar to radio frequency waves.	Will have interference issues from nearby access points(routers)
Technology	Present IrDA compliant devices	WLAN 802.11a/b/g/n/ac/ad standard compliant devices
Applications	Used in airlines, undersea explorations, operation theaters in the hospitals, office and home premises for data transfer and internet browsing	Used for internet browsing with the help of wifi kiosks or wifi hotspots

The concept of Li-Fi promises to solve issues such as, shortage of radio frequency bandwidth and eliminates the disadvantages of Radio communication technologies. Li-Fi is the upcoming and growing technology acting as catalyst for various other developing and new inventions/technologies. Therefore, there is certainty of development of future applications of the Li-Fi which can be extended to different platforms and various walks of human life.

Rush your ideas to
M. ASHOKVEL MCA.,M.Phil,M.Tech.,
Assistant Professor / CA
Editor – CAS
Mail-Id: editor.cas@gmail.com,
mashokvel@gmail.com