

# LIFI TECHNOLOGY

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**ABSTRACT:** *LIFI is a Light Fidelity. In this technology, light is passed through the transmission channel as it is the fastest medium. It overcomes the defect of WI-FI as well. The transmission of data takes place through illumination. Using this, we can connect to several devices under a single led light.*

## I.INTRODUCTION

The advancement of technology over the world is generating the need for faster communication and internet access. Currently WI-FI is used to provide wireless internet to customers but it has speed limitations. Technologies like optical fibre have already made data transfer fast. Now, similar technology like optical fibre is growing rapidly. It is widely known as LI-FI.

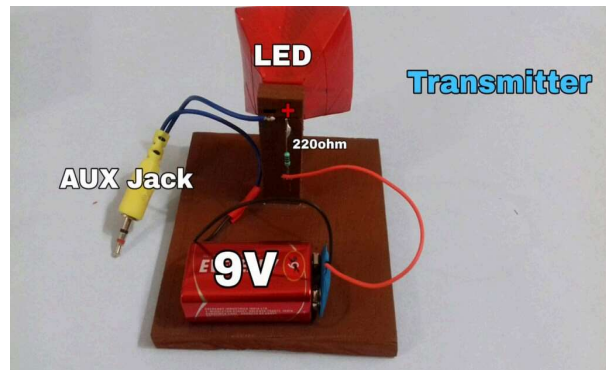
## II.NEED OF PROJECT

LIFI technology will allow us to connect to the internet using light from lamps, streetlights or LED televisions. In addition to being cheaper, safer and faster than WIFI, it does not need a router. All you need to do is point our mobile or tablet towards a light bulb to surf the web.

## III.COMPONENTS REQUIRED

1. 3V LED (white colour)
2. 220 ohm, 0.25W resistor
3. 9V battery
4. 3-5 V solar panel
5. Audio amplifier(5 Watt)
6. 3.5 mm AUX Jack

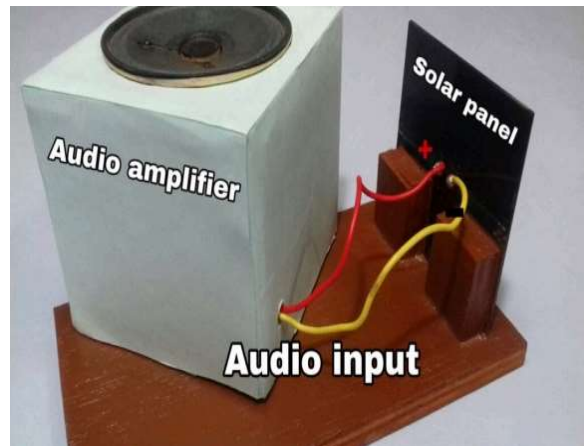
## IV.TRANSMITTER PART



Take a 3V white LED, connect the positive terminal of the LED with 220 ohm resistor, connect the other side of the resistor to the positive terminal of the 9V battery.

The negative terminal of the LED is connected with AUX Jack and the other terminal of AUX jack is connected with the negative terminal of the battery.

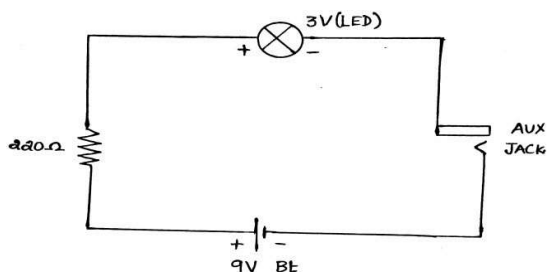
## V.RECEIVER PART



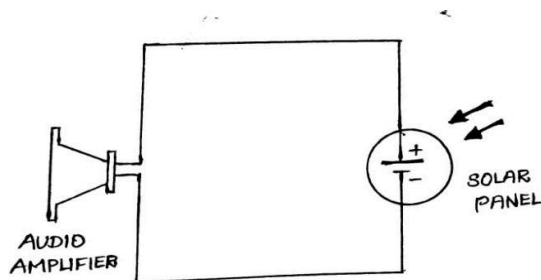
The receiver part is quite simple. Just connect the output of the solar panel to the audio input of the audio amplifier.

## VI.CIRCUIT DIAGRAM

### TRANSMITTER PART:



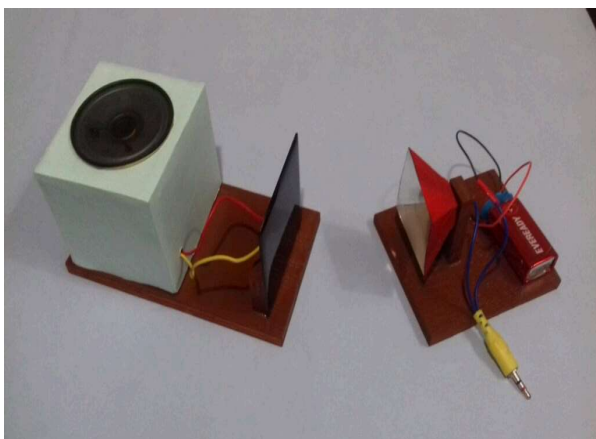
### RECEIVER PART:



## VII.WORKING

Put the transmitter and receiver in such a way that the LED and solar panel face each other. Provide audio input to the aux pin using your mobile phone or any other music player, now the LED will start glowing with full potential. Make sure that the light emitted directly falls on the solar panel and your LI-FI module will start working.

## VIII.MODEL



## IX.ADVANTAGES

**HIGH SPEED:** LIFI has a tested speed of 100GB per second which is far greater than WIFI. The speed of is approximately 3 lakh km\second, which helps LI-FI to acquire such higher speed.

**UNDERWATER DATA TRANSMISSION:** We know that radio signals cannot be transmitted underwater but light can be transmitted so using LI-FI for underwater data transmission will be beneficial.

**DATA TRANSMISSION AMONG DEVICES:** It provides an efficient way to transmit and receive data among devices securely.

**NO NEED OF ROUTER:** It doesn't need any extra router like WIFI for data transmission we can modulate our home and street lights into LI-FI module.

**SECURITY:** No hacker can get into your system unless they receive the light that contains your data.

## X.LIMITATIONS

LIFI doesn't work in the dark. LIFI has a big drawback compared to WIFI, unlike WIFI we cannot move other rooms unless there are wired bulbs too. Light can't pass through the objects. Interference from external sources like sunlight, normal bulbs, and opaque materials in the path of transmission will of course interrupt communication. High installation cost of the VLC systems. A major challenge facing LIFI is how the receiving device will transmit back to the transmitter.

## XI.APPLICATION

Used for modern medical instruments.

Used in petroleum or chemical plants where other transmission or frequencies can be hazardous.

In traffic signals, LIFI can be used which will communicate with the led lights of the car and the number of accidents can be decreased.

Location based services:-GPS.

## XII.CONCLUSION

Overcome the limitations of radio spectrum. High speed of 10Gbps can be achieved. The possibilities are numerous and can be explored further. If this technology can be put into practical use, every bulb can be used for something like a Wi-Fi hotspot. We will proceed toward the cleaner, greener, safer and brighter future. This may solve issues such as the shortage of radio-frequency bandwidth. Allows internet where traditional radio based wireless isn't allowed such as aircraft or hospitals LI-FI is enabled by advanced digital transmission technologies.

## XIII.REFERENCES

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