

Data Transmission Using LI-FI Technology

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Abstract

The technology is very new, that's call the Li-Fi (Light-Fidelity) technology. Li-Fi supply the data or infomation throughout via transport information using an LED light bulb so as to varies in strength quicker than person look at can follow. Here this document, the creator will discuss about the LIFI technology in details and also they are try to how Wi-Fi container be replace by Li-Fi. Li-Fi provides better efficiency, bandwidth and security than Wireless-Fidelity. The author detailed study on LIFI technology in this present paper.

1. INTRODUCTION

The data is transfer to one position to a different is the mainly significant day to day tricks. The wireless n/w connect through us, then the internet be extremely slow running. Once many devices be joined, then the internet are very slow. Thus the clarification of this difficulty is by the used of Li-Fi. In this project the logic is ver simple, the high brightness light emitting diodes in new generation is the core part of LI-FI technology. The judgment is very easy. A digital transmitted is 1, means the LED is ON. And digital transmitted is 0, means the LED is OFF. The LED can be switch on and off very rapidly which give us a good opportunity using light in support of transfer data.

In this paper, First the user's credentials will encrypt using the public key of the Advanced Encryption Standard Algorithm. The encrypted form will be convert into bit code and then the bit code will be transmitted through the flashlight of a smart phone to the receiver's end and transmitted successfully. At the receiver side, the LDR sensor is integrated into Arduino. In Arduino, ADC Signal detection and Bit code Conversion is performed, Bit code to Alphabetical Encrypted form, and Decryption using Advanced Encryption Standard Algorithm. LDR sensor will sense the strength of the flashlight of the smart phone. LDR sensor will throw the signal to the ADC. Signal first convert into analog and then digital form. Then the digital signal will convert into bit code and bit code to the alphabetical encrypted form. Finally, the encrypted form is decrypted by using the private key of the Advanced Encryption Standard Algorithm. The Output will be shown on the computer as the original user's credentials.

2. RELATED WORK

Many systems were developed to solve this problem. Lets discuss some of them.

[1] The first one is the Velisetti Mohana Venkata Sai Deekshith, Kosuri Siva Satyanarayana Raju. In this paper, there are two stage.

- Transmitter
- Receiver
- *TRANSMITTER*: The discrete ASCII format into the transmission pc receive a record/data and interchange data. This information is sent out passing through UART to MAX232. We conduct the output is consecutive data using UART. MAX232 is acclimated to match the voltage levels within microcontroller and RS232 logic level from pc. Max232 passes consecutive data to microcontroller someplace serial data is constructed and fed to VLC source last part circuit. This Visible Light Communication transmitter usually involve of specifically fixed 4 components, bulb, Light Emitted Diode driver circuit, Printed Circuit Board, Enclosure. The help od AND gate with carrier signal using the integraye the data stream. The LED driver circuit command the high speeds of LED (answer time is a smaller amount than 1 μ s) as stated by signal modulated.
- *RECEIVER*: The transfer glow is required to brighten on conduct which is Si photodiode. In electrical pulse voltage reformed data accepted by photodiode. A transimpedance amp is use to transfer electrical pulse into voltages. These voltages are after that feed to compare the address alteration in the signal. After that the signal is feed toward digital signal modulator

which divides carrier signals as well as data signals. Therefore acquired demodulated data signal is conduct to microcontroller used for considering along with next throw it near sender pc sequential message docks using UART and MAX232. The information file to received be able to exist shown in sender face pc hyperterminal windowpane.

Following are circuit components:

- LCD
- LED
- MAX232
- UART
- VLC

[2] In this paper the Li-Fi Technology: Data Transmission through Visible Light technology was newly developed. It's was developed by Dr.Ashoknath , Anurag Sarkar, Prof. Shalabh Agarwal Li-fi technology is basically based on LED . As we know the light can be passed very fast than blink of an eye.

In this paper the technical binary for LED ON OFF is when led is off then it is 0 when it is on then it is 1. The data is encoded through the help of binary numbers and algorithm for encoding the data. Modulation process is very fast that human cannot notice that. A light detector sense the data and pass it to the invisible type of data and then it gets converted through the decoder algorithm. This process is done wirelessly and transfer the data signal to the destination.

Li-fi term is derived from the word wifi, it wireless light fidelity. It also call as visible light communication, it uses 400thz – 800thz optical transceiver for data transmission.

There are various components which were used for li-fi technology they are:-

- Transmission Source
- Silicon photodiode
- Server
- Interactive board
- Computer
- Projector

Following are the applications of li-fi technology:-

- Li-Fi is extremely useful for applications in which communicate between transiver and reciever should be hidden. These is used for various hospital and military and defense based communications.
- Several toys consist of LED lights and these can be used to implement low-cost interaction in consideration to build interactive toys.
- Li-Fi can also be used in indoor GPS systems.

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