INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

ISSN
INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.488

LiFi for Medical Care Using Visible Light Communication

Kalvakuri Sandeep Kumar, G.Naveen, S.A.Yuvaraj

UG Student, Dept. of ECE, GRT Institute of Engineering and Technology, Tiruttani, India

Professor, Dept. of ECE, GRT Institute of Engineering and Technology, Tiruttani, India

ABSTRACT: The objective of this project is to transmit the data using LED (Light Emitting Diode). The visible light communication (VLC) is globally recognized with the increasing popularity of solid state lighting devices, as an advanced and promising technology to realize short-range, high speed and large capacity wireless data transmission. This report conveys a prototype of a real-time video broadcast system using less expensive and commercially available light emitting diode (LED) lamps. The result exhibits the real-time video with the maximum distance of 2ft can be achieved through proper layout of LED sources and improves the effects of concentration. The pattern and construction of the LI-FI (Life Fidelity) light source enable long life, efficiency , as well as full spectrum intensity that is digitally controlled and easy to use.

KEYWORDS: LIFI technology, efficient, long life.

I. INTRODUCTION

LIFI is used for the data transmission through light illumination by taking the fiber out of fiber optics and the data is sent through a LED light bulb that varies in intensity that is faster than the human eye. LIFI is the term that is used to label the fast and low cost wireless communication system which is the optical version of WI-FI.

The data is encoded in the light by varying the rate at which the LED turns on and off to give strings of 1s and 0s.It transmits a different data stream. The remaining groups are using mixtures of red, green and blue LEDs to alter the frequency of light encoding a different data channel.

Light is safe and can be used in places where radio frequency communication is often deemed problematic, such as in hospitals or aircraft cabins. So visible light communication solves the problem of lack of spectrum space, but also enables novel application. The visible light spectrum is unused; it's not regulated, and can be used for very high speed communication.

II. RELATED WORK

If the LED is on, you transmit a digital 1, If it's off you transmit at 0. The LEDs can be switched on and off very quickly, which is used as opportunities for transmitting data.

LI-FI uses just the light, it can be used in aircrafts and hospitals that is safe and they are prone to interference from radio waves. This can even work underwater. By radio waves are replaced by light waves in a new method of data transmission which is being called LI-FI. Light-Emitting diodes can be switched on and off faster than the human eye can detect,causing the light source to appear continuously. A flickering light can be remarkably annoying, but has turned out to have its upside, that's what makes it possible to use light for wireless data transmission.

The invisible on-off activity enables a kind of data transmission using binary codes :switching on an LED is a logical '1', switching it off is a logical '0'. The method of using rapid pulses of light to transmit information wirelessly is technically referred to as Visible Light Communication (VLC), though it's potential to compete with conventional WI-Fi has inspired the popular characterization Li-FI.

An overhead lamp fitted with an LED that streams data embedded in its beam at ultra-high speeds to the photo-detector and it has a signal processing technology. A receiver dongle then converts the small variations in amplitude into an electrical signal, which is then converted back into a data stream. Later it is transmitted to a computer or mobile device.

III. PROPOSED SYSTEM

We proposed existing project on hospital environment areas.this is completely used for the medical field data transmission.the light signal is used in in the hospital environment for data transmitting,as it is not EM waves,this will

not affect the humans.data transmission between microcontroller from sensor to pc using Li-Fi as a wirelessly medium.ATPG is no need for testing the data transmission.

IV. RESULTS

This project is introduced for flexible data communication in the hospital environment systems. Here we focused on reducing the cost and made appropriate selection of system components like modulation, coding and filtering.The main objective was to achieve acceptable bit error rate (BER) for indoor use and it is a low cost system. We used the Microcontroller for transferring data from Sensor to the other microcontroller which is interfaced with Personal Computer (PC) by using Li-fi communication as wireless medium. Used for the high speed communication between doctors and patients.
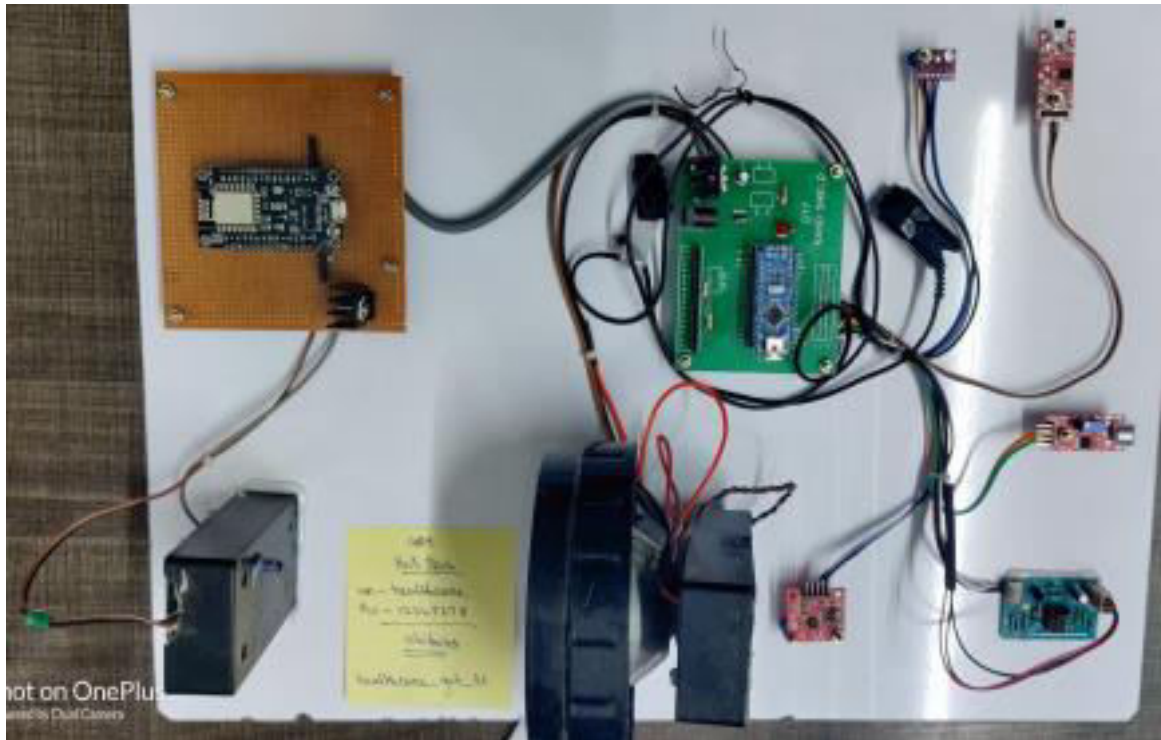

Fig.1. LI FI CONNECTIVITY FROM LED

IV. CONCLUSION AND FUTURE SCOPE

Li-Fi is becoming more suitable networks for the next generation health services at the hospital. In this document, the application of VLC is demonstrated in HMS using a prototype model. He is shown. The Li-Fi network can be successfully used as a high-speed, secure and secure human body data communication to deliver in real time monitoring heartbeat, blood pressure, temperature and various other parameters. This technology in the field of medicine makes diagnosis faster and allows you   to access the internet with the radio wave-based apparatus. The proposed system is completely automated and this could be a milestone in the medical field if it is implemented successfully.

REFERENCES

1. B. Rebsamen, C. Guan, H. Zhang, C. Wang, C. Teo, M. H. Ang, Jr., and E. Burdet, "A brain controlled wheelchair to navigate in familiar environments," IEEE Trans. Neural Syst. Rehabil. Eng., vol. 18, no. 6, pp. 590–598, Dec. 2010.
2. J. d. R. Millan, R. Rupp, G. R. Muller-Putz, R. Murray-Smith, C. Giugliemma, M. Tangermann, C. Vidaurre, F. Cincotti, A. Kubler, R. Leeb, C. Neuper, K.-R. Muller, and D. Mattia, "Combining brain– computer interfaces and assistive technologies state-of-the-art and challenges," Frontiers Neurosci., vol. 4, pp. 1–15, 2010.
3. X. Perrin, "Semi-autonomous navigation of an assistive robot using lo throughput interfaces," Ph.D. dissertation, ETHZ, Zurich, Switzerland, 2009.
4. Nijholt, D. Tan, G. Pfurtscheller, C. Brunner, J. del R. Millan, B. Allison, B. Graimann, F. Popescu, B. Blankertz, and K.-R. Muller, "Brain–computer interfacing for intelligent systems," IEEE Intell. Syst., vol. 23, no. 3, pp. 72–79, May/Jun. 2008.
5. J. R. Wolpaw, D. J. McFarland, G. W. Neat, and C. A. Forneris, "An EEG-based brain–computer interface for cursor control," Electroencephalogr. Clin. Neurophysiol., vol. 78, no. 3, pp. 252–259, Mar. 1991.
6. Y. Li, C.Wang, H. Zhang, and C. Guan, "An EEGbased BCI system for 2D cursor control," in Proc. IEEE Int. Joint Conf. Neural Network., 2008, pp. 2214–2219.
7. E. Donchin, K. M. Spencer, and R. Wijesinghe, "The mental prosthesis: assessing the speed of a P300-based brain– computer interface," IEEE Trans. Neural Syst. Rehabil. Eng., vol. 8, no. 2, pp. 174–179, Jun. 2000.
8. N. Birbaumer, N. Ghanayim, T. Hinterberger, I. Iversen, B. Kotchoubey,A. Kubler, J. Perelmouter, E. Taub, and H. Flor, "A spelling device for the paralyzed," Nature, vol. 398, pp. 297– 298, Mar. 1999.
9. K.-R. Muller and B. Blankertz, "Toward noninvasive brain–computer interfaces," IEEE Signal Process. Mag., vol. 23, no. 5, pp. 125–128, Sep. 2006.
10. J. Williamson, R. Murray-Smith, B. Blankertz, M. Krauledat, and K.-R. Muller, "Designing for uncertain, asymmetric control: Interaction design for brain–computer interfaces," Int. J. Human-Comput. Stud., vol. 67, no. 10, pp. 827–841, Oct. 2009.
11. Y. Li, H. Li, and C. Guan, "A self-training semi supervised SVM algorithm and its application in an EEG-based brain computer interface speller system," Pattern Recognition. Lett, vol. 29, no. 9, pp. 1285–1294, 2008.
12. Y. Su, B. Wu, W. Chen, J. Zhang, J. Jiang, Y. Zhuang, and X. Zheng, "P300-based brain computer interface: Prototype of a Chinese speller," J. Compute. Inf. Syst., vol. 4, no. 4, pp. 1515–1522, 2008.
13. B. Hong, F. Guo, T. Liu, X. Gao, and S.Gao, "N200-speller using motion onset visual response," Clin. Neurophysiology. vol. 120, no. 9, pp. 1658– 1666, Sep. 2009.
14. A. Karim, T. Hinterberger, and J. Richter, "Neural internet: Web surfing with brain potentials for the completely paralyzed," Neurorehabil. Neural Repair, vol. 20, no. 4, pp. 508–515, 2006.
15. E. Mugler, M. Bensch, S. Halder, W. Rosenstiel, M. Bogdan, N. Birbaumer, and A. Kubler, "Control of an Internet browser using the P300 event-related potential," Int. J. Bioelectromagnetic, vol. 10, no. 1, pp. 56–63, 2008.
16. M. Bensch, A. A. Karim, J. Mellinger, T. Hinterberger, M. Tangermann, M. Bogdan,W. Rosenstiel, and N. NessiBirbaumer, "An EEG controlled web browser for severely paralyzed patients," Comput. Intell. Neurosci., vol. 2007, pp. 1–5, 2007.

BIOGRAPHY

Dr.S.A.Yuvaraj is a Professor of Electronics and Communication Engineering at GRT Institute of Engineering and Technology, Tiruttani, Tamilnadu, India. He received B.E degree in Electronics and Communication Engineering from Madras University, Tamilnadu. India and M.E degree in Electronics & Control Engineering from Sathyabama University, Tamilnadu. India in 2001 and 2011 respectively. He received Ph.D., Degree from St. Peter's

University, Tamilnadu, India in 2017. He is having 16 Years of Teaching Experience. His research interest in Wireless Sensor Network.

Kalvakuri Sandeep Kumar B.E., degree in Electronics and Communication from GRT Institute of engineering and technology..

 G. Naveen B.E., degree in Electronics and Communication from GRT Institute of engineering and technology.

INNO SPACE
SJIF Scientific Journal Impact Factor
Impact Factor:
7.488

ISSN
INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

निस्केयर
NISCAIR

INTERNATIONAL JOURNAL
OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

📱 9940 572 462 🟢 6381 907 438 ✉ ijircce@gmail.com

Scan to save the contact details