INTRA VEHICULAR COMMUNICATION BY USING LIFI FOR PRE-EMPITIVE COLLISION AVOIDANCE

P.KOTESWARA RAO[1] , M.PRATHIBHA[2] ,K.SAI PRASANNA[3] , I.SOWJANYA[4]

[1]Assistant Professor, Dept Of ECE,Andhra Loyola Institute Of Engineering And Technology

[2]Student, Dept Of ECE,Andhra Loyola Institute Of Engineering And Technology

[3]Student, Dept Of ECE,Andhra Loyola Institute Of Engineering And Technology

[4]Student, Dept Of ECE,Andhra Loyola Institute Of Engineering And Technology

ABSTRACT

Vehicle to vehicle correspondence is a rising innovation utilized as a part of activity safety. The number of gadgets getting to the web has achieved another level. Chiefly, organize multifaceted nature and shortage of remote radio data transfer capacity prompting conceivable threat to radio recurrence interruption. Thusly, there is a squeezing need to discover new methods for remote correspondence which is quick, solid and blunder free. A large portion of these applications require continuous correspondence with high unwavering quality. Li-Fi is a remote correspondence framework in which light is utilized as a transporter motion rather than customary radio recurrence as in Wi-Fi. VLC utilizes fast beats of light to transmit data remotely that can't be recognized by the human eye. Your extend point is to improve the nature of Intelligent Transportation System (ITS) with the assistance of Visible light correspondence innovation utilizing a Li-Fi transmitter and collector pack. The got information can be utilized for further improvement in vehicle control and to dodge crashes by controlling the speed of the vehicle.

Keywords: about four key words separated by commas

1. INTRODUCTION

The Harald Hass, who is thought to be the father of Li-fi from college of Edinburgh, UK says that the heart of this innovation lies in the power and the capability of the light radiating diodes. The significant reason which lead the cutting edge man through this innovation is that the repression of Wi-Fi to relatively little separation. As there are an ever increasing number of gadgets coming up step by step the signs are being obstructed because of overwhelming activity, there arised a requirement for a blunder free transmission innovation. Also, the answer for this issue was the Li-FI innovation

In the course of recent years there has been a quick development in the use of the RF district of the electromagnetic range. This is a result of the immense development in the quantity of cell phones memberships as of late. This has been bringing about a fast lessening in free range for future gadgets. Light constancy (Li-Fi) works in the obvious light range of the electromagnetic range i.e. it utilizes unmistakable light as a medium of transmission as opposed to the conventional radio waves. In spite of the fact that Li-Fi can be utilized to off-load information from existing Wi-Fi systems, usage might be utilized to give ability to the more prominent downlink request with the end goal that current remote or wired system foundation might be utilized as a part of a reciprocal design.
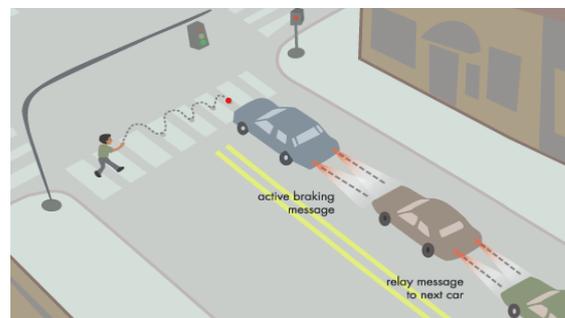

FIGURE 1.1: Data Transmission In Vehicles

In this venture we are presenting the LI-FI idea for vehicle to vehicle correspondence. We are presenting noticeable light correspondence for the mischance evasion. In this idea we utilize the VLC(obvious light correspondence) regulation systems for the balance and demodulation.

2.EXISTING METHOD

Li-Fi fundamentally known as "light loyalty" is a result of twenty first century. The fundamental belief system behind this innovation is that the information can be transmitted through LED light whose force fluctuates significantly quicker than the human eye. As the transmission of the information happens through the light radiating diodes (LED"s) the sum is relatively little .In present day times, it is called as the advanced variant of WIFI .The beneficial thing is the remote correspondence which diminishes the cost gigantically. Li-Fi is the utilization of the obvious

International Journal of Emerging Trends & Technology in Computer Science (IJETTCS)
Web Site: www.ijettcs.org Email: editor@ijettcs.org
Volume 6, Issue 2, March - April 2017   ISSN 2278-6856

light part of the electromagnetic range to transmit data at exceptionally high speeds. This is as opposed to built up types of remote correspondence, for example, Wi-Fi which utilize customary radio recurrence (RF) signs to transmit data It has been outlined such that it conquers the disservices that happens amid the use of Wi-Fi. As a rule terms, Li-fi works even submerged in this manner making an incredible advantage the military operations. The material science imagines that this innovation would have an incredible effect between the supposition and the verification for this situation .

The showing occurred utilizing two Casio advanced cells. The information was made to trade between the telephones utilizing light. Despite the fact that the separation was ostensible, it is certain that there would be a fast increment out yonder of transmission. As there is a constrained measure of Radio based remote range accessible, a number of organizations framed a consortium called Li-FI consortium so as to advance rapid optical remote frameworks .The individuals from this consortium trusts that a speed of 10 GBPS can be accomplished quickly
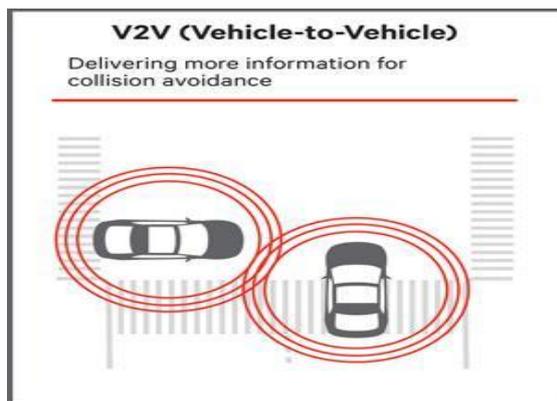

FIGURE 2.1: V2V Using Zigbee

3.PROPOSED METHOD

Li-Fi framework comprises of principally two sections, the transmitter and the recipient. The transmitter part adjusts the information motion with the required day and age and transmits the information as 0"s utilizing a LED knob. These 0"s are only the flashes of the globule. The beneficiary part finds these flashes utilizing a photodiode and opens up the flag and exhibits the yield. Light transmitting diodes can be turned on and off particularly speedier than the human eye permitting the light source to show up persistently. The information transmission is done through twofold codes which include exchanging on LED should be possible by logic 1 and turn off utilizing logic 0.The encoding of data in light can along these lines be recognized by shifting the rate at which the LED"s glint on and off to give series of 0"s and 1"s.visible light correspondence is this technique for utilizing quick beats of light to transmit data wirelessly.
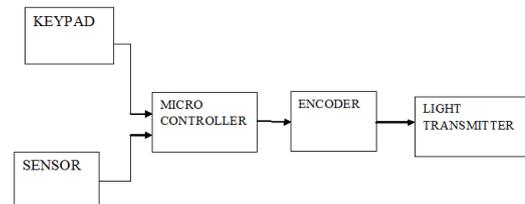
4. BLOCK DIAGRAM

4.1. TRANSMITTER

FIGURE 4.1: Block Diagram Of LI-FI Transmitter.

LED's can be turned on and off extremely quick. For transmitting information along these lines all that we require is LED's and controller that code information into LED's. Parallel information transmission should be possible by utilizing cluster of LED's or by utilizing red, green, blue LED's to change light recurrence with the recurrence of various information channel. Progressions and improvements in this field produce a speed of 10 GBPS. In any case incredibly quick information rates and bringing down band widths are definitely not the main reasons that improve this innovation. Lifi typically is in view of light thus it can be most likely actualized in articrafts and clinics that are inclined to induction from radio waves. unlike Wi-Fi, Li-Fi can work even submerged which makes it more favourable for military operations. Radio waves are supplanted by light waves in information transmission called Li-Fi.

In this we are using IR LED'S as infrared sensor, a narrow band infrared bar is transmitted from the LED. At the point when the pillar strikes an question it is reflected back towards the sensor and into a centring focal point. The centring focal point coordinates the reflected shaft onto the PSD. The episode point of the reflected pillar is controlled by the separation from the sensor to the reflecting question; the more remote away the reflecting article is, the slighter the point. As an outcome of the tight band of propagation, there is a base separation far from the Driven the reflecting item should be all together for the pillar to reflect upon the centring focal point. Moreover, as the reflecting protest moves more distant and more distant away, the adjustment in point at which the reflected shaft diminishes i.e. affectability diminishes.

A. Alcohol Sensor:

The alcohol sensor(MQ-2) is suitable for detecting alcohol concentration on breath just like your common breathalyzer. It has high sensitivity and fast response time. In your project we can easily detect the alcohol consumed person by using this sensor.

B. MICRO CONTROLLER:

Arduino uno is a small scale controller board based on ATMEGA 328 .It has 14 advanced information and yield pins. In that it has 8 simple information pins,6 PWM(Pulse width regulation) yield pins. It is customized with USB serial connector or RS232 to TTL serial connector. It is

International Journal of Emerging Trends & Technology in Computer Science (IJETTCS)
Web Site: www.ijettcs.org Email: editor@ijettcs.org
Volume 6, Issue 2, March - April 2017   **ISSN 2278-6856**

more down to earth for building home projects. It accompanies the base of components(no on board USB or PIN headers).It has two versions, one works at 5V and 16MHz and different works at 3.3V and 8MHz.

C. ENCODER

In this project encoder helps to transmit the data from micro controller to light transmitter. here we are using Manchester encoding technique .the encoder converts the ASCII value to input of the transmitter.

D. LI-FI TRANSMITTER:

In light transmitter the NPN transistor base is connected to encoder output, the collector is connected to one terminal of the led and emitter is connected to ground. the other input of led is connected to power supply. at the point when the encoder output is 1,the transistor is shorted. thus the drove will flashes on. whenever the encoder output is zero then the NPN transistor will off hence led will flashes off.

FIGURE 4.2: Li-Fi Transmitter Kit.
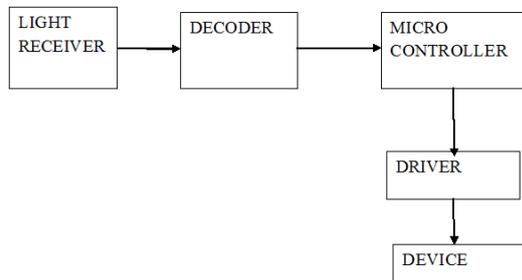
4.2. RECEIVER

FIGURE 4.3: Block Diagram Of LI-FI Receiver.

A. LIGHT RECEIVER:

At the place light receiver we are using photo diode .When ever light intensity is high the resistance at the photo diode will decreases .The photo diode is connected to NPN

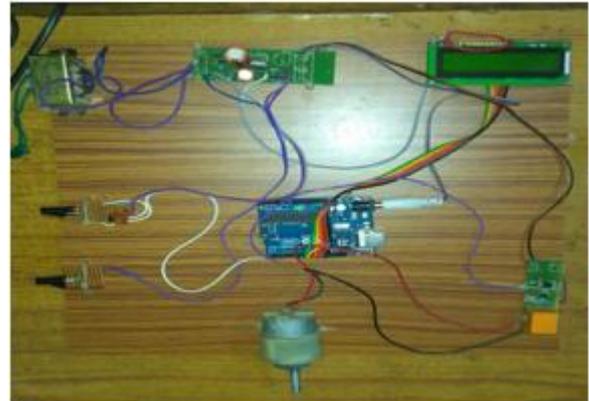transistor. Which helps us to convert light flash into ASCII word bits through optical communication .

FIGURE 4.4: Li-Fi Receiver Kit

B. DECODER:

In this project LI-FI receiver will send the data in the form of 0's and 1's. so the decoder will the decode the encoded binary data to characters.

4.3. WORKING PRINCIPLE

In the infrared sensor, a narrow band infrared beam is transmitted from the LED. When the beam strikes an object it is reflected back towards the sensor. IR distance sensor sense the information about the detected object and transfers to the controller. Controller used here is Arduino UNO which is a microcontroller board based on ATMEGA 328 .It has 14 digital input and output pins. In that it has 8 analog input pins,6 PWM(Pulse width Modulation) output pins.LCD display which is interfaced to controller pins(12,11,5,4,3,2) gives the information and it is displayed in LCD. Simultaneously the motor speed is reduced by the controller.

In case of emergency situation or any break failure the buzzer sound is produced. These information's are transmitted to the Li-Fi transmitter. Receives the information from the controller and it modulates the data to light signal and transmits to the receiver section. The transmitter part modulates the input signal with **the** required time period and transmits the data in the form of 1"s and 0"s using a LED bulb. These 1"s and 0"s are nothing but the flashes of the bulb .In the receiver section ,it receives the modulated information from the transmitter section and demodulates the signal in order to recover the original data.

.

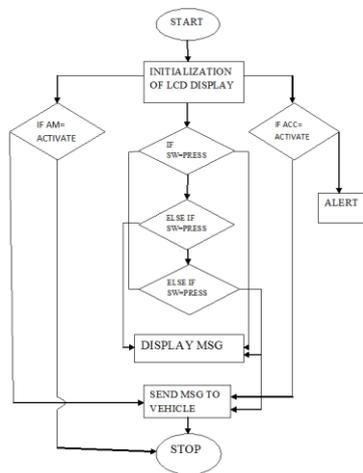**FIGURE 4.5**: Data Transmission USING line Of Sight.

FIGURE 4.6: Flow Chart

The receiver part catches these flashes using a photodiode and amplifies the signal and transmits to the controller so that the speed of the following vehicle can be reduced which will be indicated in the LCD display present in the receiver section.

5. CONCLUSION

We have presented a VLC system consisting of an li-fi transmitter and receiver that is targeted at v2v applications, and introduced its characteristics and capabilities .in traffic signals, Li-Fi can be used which will communicate with the led lights of the cars and accident numbers can be decreased. Li-Fi is ideal for high density coverage in a confined region .it is believed that the technology can yield a speed more than 10 GBPS .It is the fastest and cheapest wireless communication systems which is suitable for long distance communication Li-Fi will make all lives more technology driven in the near future.
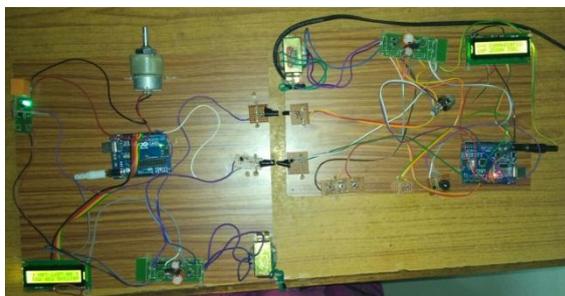
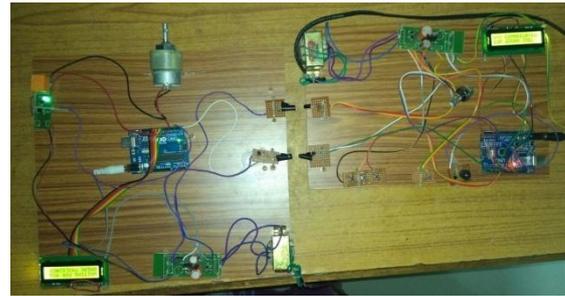## 6. RESULT

FIGURE 6.1: Sending Message As I Am At Left Lan

FIGURE: 6.2: Sending Message as Break Failed

References

[1] Design And Implementation Of V2v Communication Https://Www.Irjet.Net/Archives/V3/I5/IRJETV3I5.
[2] Vaishali D. Khairnar and Dr. Ketan Kotecha, "Performance of Vehicle-to-Vehicle Communication using IEEE 802.11p in Vehicular Ad-hoc Network Environment", DOI : 10.5121/ijnsa.2013.5212, March 2013.
[3] Yizhi Wang, Jianming Hu, Yi Zhang, and Chao Xu, Reliability Evaluation of IEEE802.11p-Based Vehicle-to-Vehicle Communication in an Urban Express way, August 2015.
[4] Sridhar Rajagopal, Richard D. Roberts and Sang-Kyu Lim,"IEEE 802.15.7 Visible LightCommunication: Modulation Schemesand Dimming Support"IEEE Communications Magazine March 2012
[5] T. Nagura et al., "Tracking an LED array transmitter for visible light communications in the driving situation," in Proc.7th Int. Symp.Wireless Common. Syst., Sep. 2010, pp. 765–769.
[6] S. Hranilovic, L. Lampe, and S. Hosur, "Visible light communications: The road to standardization and commercialization (Part 1)," IEEE Commun. Mag., vol. 51, no. 12, pp. 24–25, Dec. 2013

Author

Assistant Professor, Department Of ECE, Andhra Loyola Institute Of Engineering And Technology, Vijayawada-520008

B. Tech final year student, Dept of ECE, Andhra Loyola Institute of Engineering and Technology, Vijayawada-520008

B.Tech final year student, Dept of ECE, Andhra Loyola Institute of Engineering and Technology, Vijayawada-520008

B. Tech final year student, Dept of ECE, Andhra
Loyola Institute of Engineering and Technology,
Vijayawada-520008