Traffic Control of Vehicle by Using Visible Light Communication

Viplav K. Dube[1], Nilesh bodne[2], Sneha Sawarkar[3]

[1] *Researcher , Electronics and Communication, Vidharbha Institute of Technology, Maharashtra, India*
[2] *Vice principle, Electronics and Communication, Vidharbha Institute of Technology, Maharashtra, India*
[3] *Professor, Electronics and Communication, Vidharbha Institute of Technology, Maharashtra, India*

ABSTRACT

We can control traffic according to frequency of vehicle on road. Generally traffic of vehicle on road are controlled by using timing of signal and electro magnetic sensor. This process of controlling of vehicle traffic are not that much effective and traffic of vehicle may increase. By using visible light communication we can control the traffic light of the system according to frequency of vehicle on road. Due to this traffic of vehicle on road easily and effectively control by the visible light communication.

Keyword : - *vehicle identification , traffic control, visible light communication, and vehicle sensor etc….*

1. INTRODUCTION

We can see that generally traffic light control controlled by timer where timing of timer is fixed. Green light and red light has fixed timing to on and off of three colour light. Three colour of light get used for controlled traffic i.e. red, green, and orange. Red light use to stop the vehicle, green light use to pass away vehicle and orange light use to slow down the vehicle. This light is controlled by timing of the light. Every light is on and off for fixed interval of time. According to timing of light and its indications vehicle on road controlled. Due to fixed time interval provides to every light are not effective. Traffic signal provide green light not even single vehicle on road or signal. In case of heavy traffic on road signal gives only green signal for fixed interval of time it may cause traffic of vehicle. This problem can be removed if we can sense the frequency of vehicle road and according to that we can provide the timing of the signal. If particular road path have heavy traffic then one should sense that and according to that timing to signal provide. This can reduce the traffic of the signal. It always allowed the vehicles on high traffic road for maximum time as compare to other. In market there are several system on which we can sense the vehicle traffic on road and controlled traffic .

In India there is AHO applied to vehicle, after April 2017 all manufacture manufacturer launch the vehicle with all time head light on[2]. That means vehicle headlight always be on there is off switch at vehicle. Due to AHO vehicle headlight is on all the time user of vehicle cant control the headlight of the light. In European country there vehicle headlight always be on because of atmospheric condition. To utilized head light of vehicle for traffic control by using visible light communication first we have to provide digital identification to each and every vehicle. Recently i published paper on international journal of engineering service and research technology on topic of unique identification of vehicle by using visible light communication. This paper tell that we can provide the digital identification to vehicle. Due to this receiver identified whether this light is vehicle light or other light. If we provide digital identification to vehicle we can fixed the sensor on road to detect the vehicle traffic on road. According to vehicle traffic on road we can controlled timing.

VLC transmitter is nothing but light source which we can utilized of vehicle head light. Controlling switching of headlight we can transmit the digital code. Receiver side we can use photo transistor receiver which sense the pattern and detect vehicle and light of the vehicle[1]. VLC is best method for traffic controlled because light source itself present in vehicle so we does not need extra input we can utilized vehicle head light itself.

2. LITERATURE SURVEY

In Recently Viplav Dube publish paper on unique identification to vehicle by using visible light communication in international journal of engineering science and research technology in 2018. This paper clearly imply the idea of digital identification to vehicle. Unique and digital identification can possible by visible light communication[1].

In 2013 M. V. Bhalerao, S. S. Sonavane, V. Kumar, "A Survey of Wireless Communication Using Visible Light", International Journal of Advances in Engineering & Technology, Vol-5, Issue-2, pp: 188-197. Proposed about survey of wireless communication using visible light communication. In that he stated about transmission of data in form of audio and video[3].

Cheng-Chun Chang, Yuan-Jun Su, Umpei Kurokawa, and Byung Il Choi, published paper on "Interference Rejection Using Filter-Based Sensor Array in VLC Systems", on IEEE Sensors Journal, Vol:12, Issue:5, pp: 1025-1032, 2012. Where data transition in digital form by using array is possible and state about interfaces of filter based array[4].

In 2012Nam-Tuan Le and Yeong Min Jang, published paper on "Virtual Cognitive MAC for Visible Light Communication System", in International Journal of Smart Home, Vol: 6, Issue: 2, pp: 95-100. They clearly said that virtual cognitive MAC is possible by visible light communication[5].

K Kanthikumar, D.Koteswara Rao, Dr. A. Yesu Babu and Dr. P. Premchand, publish paper on "An alternative communication technology: based on white LED's in visible light communication", on IJECT, Vol: 2, Issue: 1, pp: 168-172, 2011. Where they introduce alternate wireless communication as visible light communication[6].

For enhancing application of visible light communication Soo-Yong Jung, Swook Hann, and Chang-Soo Park, introduced paper TDOA-Based Optical Wireless Indoor Localization Using LED Ceiling Lamps", on IEEE Transactions on Consumer Electronics, Vol: 57, No: 4, pp: 1592-1597, in 2011. Due to effect of wireless network technology in home appliances visible technology get introduced varies ideas of home appliances[7].
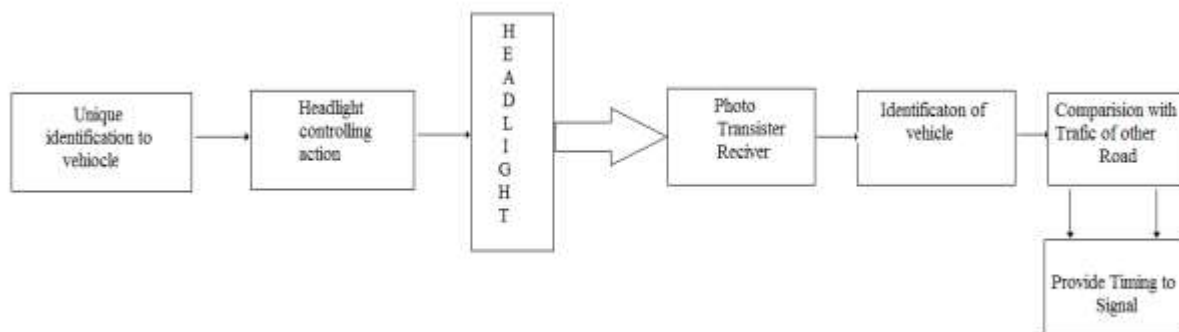
3. BLOCK DIAGRAM

Fig no1:- block diagram of traffic control

Head light of vehicle act as transmitter itself which is controlled by my controller i.e. LED driver. Switching capacity of LED utilized by VLC. Headlight of vehicle transmit train of pulse and detected by photo detector. Photo transmitter detector detect the train of pulse and identified the vehicle. On particular road we can analysis the traffic of vehicle by detecting vehicle. This train of light detected by photo transistor receiver and controlled traffic light. Frequency of vehicle detected by receiver and according to that timer timing is set and flexible which is depend on frequency of traffic on road.

4. CONCLUSIONS

We can provide digital identification to vehicle by using VLC. We can sense the frequency of traffic on road by using visible light communication, by using headlight of light use as transmitter and photo transistor used as receiver.

We also analysis the frequency of vehicle on road by VLC and calculated allotment of timing. By this method we can control the traffic of vehicle on road on basis of there frequency.

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