International Journal of Advance Research in Science and Engineering
Volume No.07, Issue No.06, June 2018
www.ijarse.com
IJARSE
ISSN: 2319-8354

SMART TRAFFIC CONTROL SYSTEM USING WEIGHTED DATA

Priyanka Sharma[1], Dr. Anjana Goen[2]

[1]M.Tech Scholar , Department of Electronics & Communication ,RJIT,Tekanpur.

[2]Associate Professor , Department of Electronics & Communication ,RJIT,Tekanpur.

ABSTRACT

Now –a-days traffic problem is the biggest hindrance in the development of cities as it reduces the speed of development .So to overcome this problem this paper is being presented . Delhi is known for its record pollution levels. Owing to the toxic air that Delhi is breathing, the Odd-Even road rationing scheme will be back in Delhi from November 13 to 17. Under the scheme, cars with license plates ending in an odd number and even number are allowed to ply on alternate days. The scheme aims to cut down vehicular traffic by half. This paper is to present the initial steps in the implementation of a smart traffic light control system based on Programmable Logic Controller (PLC) technology. We, in this method, intend to measure the traffic density by counting the number of vehicles in each lane and their weight, then pass them or diverge them accordingly. It is also difficult for a traffic police to monitor the whole scenario round the clock. So, this system can be implemented on highways and city traffic.

Keyword: *Arduino uno board, comparator, LEDs, object counter, RFID, Weight sensor,*

I.INTRODUCTION

Movement signals are the most helpful technique for controlling activity in a bustling intersection. However, we can see that these signs neglect to control the movement viably when a specific path has got more activity than alternate paths. This circumstance makes that specific path more crowdie than alternate paths. On the off chance that the activity signs can apportion distinctive paths to various vehicles in light of their weight, similar to transports, trucks and so forth in one path, autos in one path and like this the movement clog can be illuminated by separating the activity as needs be. In this technique, expect to gauge the movement thickness by including the quantity of vehicles every path and their weight, at that point stop in mechanized stopping or veer them appropriately. It is likewise troublesome for a movement police to

screen the entire situation round the clock. In this way, this framework can be executed on interstates and city movement.

The principle point of planning AI activity controllers is that the movement controllers can adjust to the ongoing information from locators to perform consistent advancements on the flag timing get ready for crossing points in a system keeping in mind the end goal to lessen activity blockages, which is the fundamental worry in rush hour gridlock streams control these days, at activity convergences [1]. A movement light gathering is characterized as an arrangement of activity lights which are controlled by a similar controller, which goes about as an ace or facilitator. The controller works under a canny framework that takes into account controlling the lights status relying upon time, activity conditions, and so forth. Urban activity control procedures depend on lights controllers. A crossing point is overseen by a controller responsible for a few red lights. The administration depends on stages, cycles, split vectors and coordination between the controllers of the distinctive crossing points out and about system[2].

In order to implement the applications indicated, a certain level of intelligence is required in both the traffic light and the regulator. Traditional traffic control systems are unidirectional, from regulator to traffic lights [3].

One strategy for optimum control and traffic management is the coordination of traffic lights to create green waves. Currently, there exist different strategies to calculate green waves. The main purpose of these techniques is to reduce the number of stops and minimize the travel times in trips [4].

Here we intend to use weight sensors and counters to control the traffic with ease.

II. METHOD AND WORKING

In this method we are proposing to reduce the heavy traffic and congestion on the road by using PLC based traffic diversion system. This would work on weight sensing using sensors whose output will be fed to a PLC, which will control the traffic diversion. In this system we will use the weight data lying on the road to check which route have the highest number Of vehicles using PLC , because as many no..of vehicles will increase congestion on the road . This weight data will be fed to the Arduino board which compare this data on each front and will allow the route which have maximum number of vehicles pass through .

Weight sensor is placed under traffic circle. It senses the weight & sends signal to PLC. PLC will generate a slip having the info about the vehicle to the microcontroller , when data will arrive to the arduino uno board , then it will compare the data on the basis of weight with all other data arriving from different

routes . PLC will check the route which have higher weight than all others. Now the PLC will work according to this result and will stop all the routes except the route having the highest weighted data.

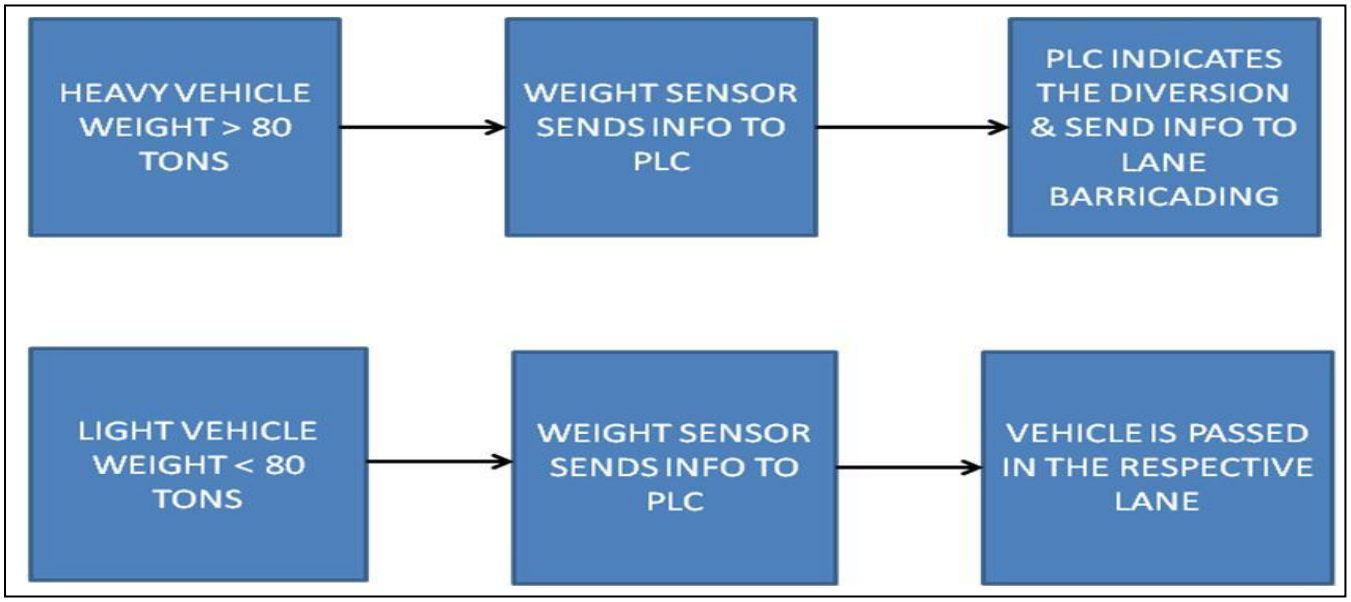

Fig. 1 Flow chart for diversion of vehicles based on weight

III. ELECTRONIC EQUIPMENTS

LED bulb (green ,red ,yellow) , arduino uno board ,weight machine ,LCD , comparator .

Arduino uno board :- It is a microcontroller board base microchip ATmega328P microcontroller and developed by Arduino.cc. It is widely used open –source microcontroller. This board has 14 digital and 6 analog pins. It can be powered by an external DC adaptor and USB allows us to upload the programming to the board ,it accepts voltages between 7 and 20 volts. The Uno is ATmega328P is programmed as a USB-to-serial converter.

Comparator:- We are using this device to compare the weighted data provided accordingly .Due to this device we are able to find the road which is having more weight .congestion can be controlled with new technology using the comparator to differentiate the road having more weight.

LED:- This is light emitting diode which is going to be used for giving the indication of heavy traffic congestion and for clearance of the road to allow the vehicles to pass through .red ,green , and yellow colour LEDs are basically used for this purpose.

IV. AUTHORS AND THEIR RESEARCH

[2010] Azura Che Soh in his research the segregated convergence display utilized comprises of two paths in each approach. Each approach has two distinct estimations of vehicles line length and holding up time, separately, at the convergence. The greatest estimations of vehicles line length furthermore, holding up times are chosen as the contributions to controller for advanced control of movement streams at the convergence.

[2012] Ovidiu TOMESCU et al in their research , they considered a urban blood vessel street and research the issue of versatile activity light control utilizing continuous movement data. The urban activity stream relies upon the driver conduct, and furthermore, it is impacted by movement control and natural variables. Based on this unique situation and the expansion, step by step, of the quantity of vehicles in urban territories, the creators are centred around discovering answers for utilize the present street framework in a serious way. Each crossing point is controlled by its own activity volume, vehicles write and its neighboring crossing points helpful suggestions.

[2013] Ninad Lanke in his work he proposed a new innovation which will require less time for establishment with lesser expenses when contrasted with different techniques of movement blockage administration. Utilization of this new innovation will prompt decreased movement blockage. Bottlenecks will be identified early and henceforth early preventive measures can be taken therefore sparing time and cash of the driver.

[2014] Rahul Narayan Dhole his work offers guidelines to stop and not to vehicle traffic. Yet, in the event that somebody is breaking the flag then this framework can't get them and there are odds of taking fix. Consequently to expand the security of movement flag and to lessen human endeavours and to stay away from the pay off we are presenting keen activity flag framework through this smaller than expected undertaking. Brilliant movement flag in light of the microcontroller and ultrasonic sensor, in which ultrasonic sensors are set at one side of street in such a route in order to cover specific essential territory of street from where the vehicles are limited to pass. On the off chance that the flag is red and any vehicle is breaks the flag then ultrasonic sensor distinguish it and microcontroller make quickly move to signal alert

alongside camera catch the picture of that vehicle. It additionally make record of when, where, which vehicle breaking signal by sparing picture specifically organizer as name of current date and time.

[2014] Kuei-Hsiang Chao et al in his work ,he examined basically centres around the utilization of radio recurrence distinguishing proof as a type of movement stream location, which transmit gathered data identified with activity stream specifically to a control framework through a RS232 interface. In the meantime, the sensor breaks down and judges the data utilizing an expansion calculation intended to accomplish the target of controlling the stream of movement. Likewise, the movement stream circumstance is additionally transmitted to a remote observing control framework through ZigBee remote system correspondence innovation. The movement stream control framework created in this investigation can perform remote transmission and diminish auto collisions. Furthermore, it can likewise viably control movement stream while lessening activity postpone time and keeping up the smooth stream of traffic.

[2014] Kiran.K.Modak et al in their research **,**to make traffic light controlling more productive they abuse the rise of new procedure called as "Keen Traffic Control System". This makes utilization of sensors along with installed innovation .The timings of the red and green lights will be adroitly chosen in light of the movement on nearby streets. When contrasted with settled mode movement light controller this new framework is more productive also, adaptable. It additionally had a shrewd movement control framework to pass the crisis vehicles, for example, emergency vehicle, fire detachment and so on and furthermore identify and track the stolen vehicles

[2015] Kirushnacumar. A et al in their paper, a web camera is set there in a rush hour gridlock path that will catch pictures of the street on which we need to control activity. At that point these pictures are proficiently handled to know the activity thickness. As per the prepared information from MATLAB, the controller will send the order to the clock to indicate specific time on the flag to oversee movement .

[2016] Deepti Mayee Dash in his paper he presented the initial steps in implementation of smart traffic light signal that provides a complete solution to manage current traffic problems effectively using sensor and microcontrollers. This project not only just controls the timer of light signal by measuring the density of traffic but also prevents illegal jumping of traffic light. Special emergency vehicles like ambulance etc. are given special privilege to make their movement smoother in traffic.

[2016] BILAL Ghazal et al proposed a paper to acknowledge smooth movement of autos in the transportation courses. Be that as it may, the synchronization of numerous activity light frameworks at nearby crossing points is a muddled issue given the different parameters included. Ordinary frameworks don't deal with variable streams moving toward the intersections. What's more, the common impedance between adjoining activity light frameworks, the dissimilarity of autos stream with time, the mischances, the section of crisis vehicles, and the passerby crossing are not actualized in the current movement framework. This prompts road turned parking lot and blockage. We propose a framework in light of PIC microcontroller that assesses the activity thickness utilizing IR sensors and achieves dynamic planning openings with various levels.

V. PROPOSED WORK

The database presented in and used in this study was collected from the previous research papers "Implementing Intelligent Traffic Control System for Congestion Control, Ambulance Clearance, and Stolen Vehicle Detection by Rajeshwari Sundar'' . Reviewing above papers , i found the problem that we are still unable to short out the problem regarding traffic congestion , so i am going to work on the technology which can control the traffic problem based on weighting machine which will indicate the road of having heavy traffic and give an indication , LED will glow and accordingly traffic police will allow the vehicle to pass through and this innovation will help in reducing wastage of time which happens at the time of traffic .

REFFERENCES

[1] L. Jacioa, "Programming 16-bit microcontrollers in C. Learning to fly the PIC 24", 1st ed, Newness Elsevier, 2007.

[2] D. Smith, "PIC in practice. A project – based approach", 2nd ed, Newness Elsevier, 2006 *(PDF) Smart traffic light control system*. Available from: https://www.researchgate.net/publication/305674408_Smart_traffic_light_control_system .

[3] Azura Che Soh/Lai Guan Rhung "MATLAB Simulation of Fuzzy Traffic Controller for Multilane Isolated Intersection" www.enggjournals.com/ijcse/doc/IJCSE10-02-04-11.pdf.

[4] M. Srivastava, Prena et all, "Smart traffic control system using PLC and SCADA", International journal of innovative research in science engineering and technology, Vol. 1, Issue 2, pp. 169-172, Dec 2012.

[5] M. Khattak, "PLC based intelligent traffic control system", International journal of electrical & computer sciences (IJECS), Vol. 11, No. 6, pp. 69-73, Dec. 2011

[6] N. Hashim, A. Jaafar et all, "Traffic light control system for emergency vehicles using radio frequency", IOSR journal of engineering, Vol. 3, Issue. 7, pp. 43-52, July 2013.

[7] S. maqbool, U. Sabeel et all, "Smart traffic light control and congestion avoidance system during emergencies using Arduino and Zigbee 802.15.4", International journal of advanced research in computer science and software engineering, Vol. 3, Issue. 6, pp. 1801- 1808, Jun 2013.

[8] S. Jaiswal, T, Agarwal, A. singh, and Lakshita, "Intelligent traffic control unit", International journal of electrical, electronics and computer engineering, Vol. 2, Issue. 2, pp. 66-72, Aug. 2013.

[9] N. Mascarenhas, G. Pradeep et all, "A proposed model for traffic signal pre-emption using global positioning system (GPS)", Computer science & information technology, pp. 219-226, 2013.

[10] P. Parida, S. Dhurua, and S. Priya, "An intelligent ambulance with some advance features of telecommunication", International journal of emerging technology and advanced engineering, Vol.4, Issue 10, Oct.2014. *(PDF) Smart traffic light control system*. Available from: https://www.researchgate.net/publication/305674408_Smart_traffic_light_control_system [accessed Aug 02 2018].

[11]A. Dakhole, M. Moon, "Design of intelligent traffic control system based on ARM", International journal of advance research in computer science and management studies, Vol. 1, Issue 6., pp. 76-80, Nov. 2013.

[12] A. Jadhav, B. Madhuri, and T. Ketan, "Intelligent traffic light control system (ITLCS)", Proceedings of the 4th IRF international conference, Pune, 16 March 2014. *(PDF) Smart traffic light control system*. Available from: https://www.researchgate.net/publication/305674408_Smart_traffic_light_control_system [accessed Aug 02 2014].

[13] A. Jadhav, B. Madhuri, and T. Ketan, "Intelligent traffic light control system (ITLCS)", Proceedings of the 4th IRF international conference, Pune, 16 March 2014. *(PDF) Smart traffic light control system*. Available from: https://www.researchgate.net/publication/305674408_Smart_traffic_light_control_system [accessed Aug 02 2018].

[14] Monica Voinescu, Andreea Udrea, Simona Caramihal "On Urban Traffic Modelling and Control" http://www.ceai.srait.ro/index.php/ceai/article/view/307

[15] C. M. Mwangi, S. M. Kang'ethe and G. N. Nyakoe "Design and simulation of a fuzzy logic traffic signal controller for a signalized intersection"elearning.jkuat.ac.ke/journals/ojs/index.php/jscp/article/view/699

[16] Ovidiu TOMESCU, Ilona Madalina MOISE, Alina Elena STANCIU, Iulian BĂȚROŞ "Adaptive Traffic Light Control System using AD HOC Vehicular Communications Network" www.scientificbulletin.upb.ro/rev_docs_arhiva/full6a2_686823.pdf