LIGHT CONTROL SYSTEM FOR EMERGENCY VEHICLES

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Abstract:

Traffic congestion problem is a phenomena which contributed huge impact to the transportation system in country. This causes many problems especially when Traffic there are emergency cases at traffic light intersections which are always busy with many vehicles. A traffic light controller system is designed in order to solve these problems. This system was designed to be operated when it received signal from emergency vehicles based on radio frequency (RF) transmission and used the Programmable Integrated Circuit (PIC) 16F877Amicrocontroller to change the sequence back to the normal sequence before the emergency mode was triggered. This system will reduce accidents which often happen at the traffic light intersections because of other vehicle had to huddle for given a special route to emergency vehicle. As the result, this project successful analyzing and implementing the wireless communication; the radio frequency (RF) transmission in the traffic light control system for emergency vehicles. The prototype of this project is using the frequency of 434 MHz and function with the sequence mode of traffic light when emergency vehicles passing by an intersection and changing the sequence back to the normal sequence before the emergency mode was triggered. In future, this prototype system can be improved by controlling the real traffic situation, in fact improving present traffic light system technology.

Keywords: Sensor, Controller, Different LEDs for Traffic Light, Movement administration, Emergency administration focus, episodes, Fire, Intelligent transportation framework.

1. Introduction

The movement lights are utilized for the most part for walkers to be ensured when they cross the streets. The typical capacity of activity framework is to control the coordination to guarantee that activity moves as easily and securely as could reasonably be expected. It was diminishing impacts, both vehicular and people on foot. It was energize go inside as far as possible to meet the green lights. The crisis will happen anyway, at whatever time and on any area. All things considered the expediently reaction is required. The number of vehicles utilizing the constrained street

systems base which was gradually expanded. I feel that the real outcome of this increment is the activity administration issue. A standout amongst the most basic results of movement issue is the postponement of crisis vehicles, for example, rescue vehicle amid mishaps to reach clinics on time, Fire detachment vehicles, police van to get the criminal, and VIP (priest or president) vehicles. There are congested driving conditions happen on fundamental path in extraordinary seasons and surge hours. That was lead to a long holding up time of people groups and high cost of fuel utilization on the street. What's more, in that defer the Emergency vehicles are trapped in automobile overloads.

Some of the time regardless the possibility that there is no movement then likewise individuals need to hold up on the grounds that there is a sure time cutoff of activity sign. So street clients need to hold up till the movement signal swung to green light. In this way we need to find new techniques which take care of this issue. The

Emergency administrations started six years back in India. Within beginning aggregate 14 ambulances are begun in Ahmadabad and Gandhinagar, which was gradually expanded. As of late the majority of passings are brought about due to the activity clog.

Furthermore, emergency vehicle likewise couldn't go quick as due to congested driving conditions close to the movement intersection. Arrangement of this issue is to control the activity framework so that it would be useful to secure somebody's life by giving first need to the emergency vehicle [1]. In agreement with this, now a day's swinging to the manual control it will in some cases fathom the issue. Be that as it may, to do this programmed control is a major undertaking in today's situation. Especially in India, Most of individuals can't give a route for a rescue vehicle in light of movement[9].

The Indian emergency vehicle investigation was done around 400 autos out and about. There was 0% reaction to an Indian rescue vehicle. Assume somebody has endured a heart assault and needs rescue vehicle quickly. In any case, by along these lines the patient will bite the dust some time recently the rescue vehicle could reach to the doctor's facility. The Indian individuals couldn't do even a push to pass the emergency vehicle first.

The individual kicked the bucket before the rescue vehicle span to the doctor's facility. At that point who is in charge of him or her demise? On the flip side in remote, each individuals are giving a first need to an emergency vehicle. So why proved unable finished with Indian people groups? The Indian people groups can likewise do the same thing while their relatives are lying in this emergency vehicle. Around then they feel this circumstance. So why would we be able to need to sit tight for this much time? Why we could not actualize this from today itself? Simply think this

by giving the primary need to a rescue vehicle, we can spare somebody's life and on him/her depends the life of them family. India has the most noteworthy number of passings because of deferral of emergency vehicle. What's more, recollect that we can beat this by giving 'Right of Way' to the emergency vehicle. Alongside executing movement signals, 10 out of 10 lives can be spared. Likewise you can spare lives and spare mankind. Use of time following a mishap is brilliant hours [2], so that recovery move ought to be made promptly. Too we need to minimize the postponement that is brought about by activity clog [5].

2. Literature Survey

Ayush Kr. Mittal and Deepika Bhandari proposed a green wave framework. It is utilized to give freedom to any crisis vehicle by turning all the red lights to green on the way of the crisis vehicle, thus giving complete green wave to the craved vehicle. A "green wave" is the synchronization of the green period of activity signals. With a "green wave" setup [1], a vehicle going through a green sign will keep on receiving green signs as it goes not far off. Preferred standpoint of the framework is that GPS inside the vehicle does not require extra power. The greatest inconvenience of green waves is that, when the wave is aggravated then the unsettling influence can bring about activity issues that can be exacerbated by the synchronization. In such cases, the line of vehicles in a green wave develops in size until it turns out to be too extensive and a portion of the vehicles can't achieve the green lights in time and vehicles must stop. This is called over-immersion.

Suresh Sharma, A.Pithora, G.Guptha, M.Goel, and M. Sinha proposed a RFID framework. The utilization of RFID activity control to keep away from issues that as a rule emerge with standard activity control frameworks, especially those identified with picture handling also, shaft intrusion systems are talked about. This RFID framework [2] manages multi vehicle, multi lane, multi street intersection regions. It gives a productive time administration plan, in which a dynamic time timetable is worked out in genuine time for the street of every movement segment. The constant operation of the framework gives the judgment of an activity policeman on obligation. Number of vehicles in every segment and the steering are legitimacies which upon the computations and the judgments are finished. The impediment of this work is that it doesn't examine what techniques are utilized for correspondence between the crisis vehicle and the movement signal controller.

Geetha.E, V.Viswanadha, Kavitha.G proposed a savvy auto activity signal control framework. Activity blockage is one of the significant issues to be considered. For the most part Vehicular activity meets at the intersections of the street and are controlled by the movement signals. Activity signals require a decent coordination and control to

guarantee the smooth and safe stream of the vehicular movement. Amid the surge hours, the activity on the streets is at its crest. Likewise, there is a probability for the crisis vehicles to stick in the road turned parking lot. In this manner; there is a requirement for the dynamic control of the movement amid surge hours. Thus, they propose a shrewd movement signal controller. The proposed framework tries to minimum potential.The framework depends on the PIC 16F877A small scale controller, IR sensors and Radio Frequency Identification (RFID) innovation [3]. The code for this anticipate is gathered in cutting edge C compiler and the recreated with Proteus programming.

N. Ahmed Surobhi and Abbas Jamalipour proposed a M2M-Based Service Coverage. In a reasonable portability show that incorporates user‟s post-crisis complex behavioral changes. Later on, this paper proposes a machine-to-machine(M2M) organizing based administration scope system [4] for post-crisis situations. The proposed layout performs not just precise forecast of the proposed client portability additionally best impersonation, using these expectations, of the focal server to accomplish nonstop administration scope. What's more, the diagram requires no supervision and less assets to play out these capacities because of utilization of the M2M organizing.

Xue Yuan, XiaoliHao, Houjin Chen, and Xueye Wei proposed a novel descriptor for a TSR framework known as the Color.Worldwide LOEMP. The Color Global LOEMP is a structure that can adequately join shading, worldwide spatial structures, worldwide bearing structures, and nearby shape data. What's more, the Color Global LOEMP is powerful to brightening conditions, scale, and pivot varieties. With a specific end goal to check the viability of the recognition module[5],two activity sign information sets, i.e., the Spanish movement sign set and the authors‟ information set, were tried.

Moreover, two movements in information sets, i.e., the GTSRB information set and the authors‟ information set, were tried to accept the effectiveness of the acknowledgment module. The pictures were caught under various states of geometric disfigurement, harm, climate,furthermore, lighting. Distinctive picture elements, for example, the HOG highlight, shading histogram components, and nine sorts of LBP-based elements, were utilized with the end goal of correlation, and the trial results exhibited the viability of the proposed technique.

From the present issue area, it can be seen that, current advancements are inadequate to handle the issues of clog control, crisis vehicle freedom.

We actualize Intelligent Traffic Control System for Emergency Vehicle Clearance. The picture arrangements from a camera are broke down utilizing different edge identification and item numbering strategies to get the most effective strategy.

A while later, the quantity of vehicles at the crossing point is assessed and activity is effectively overseen. The activity signal sign constantly shines to green the length of the crisis vehicle is holding up at the activity path. After the vehicle crossed the intersection, naturally the movement signals take after the past example era of activity signs.

3. Issues Related to Traffic for Emergency

Vehicle

There are few papers which portray that to overcome the issue of congested road and they gave a few thoughts for emergency vehicle to achieve the healing center quickly. This is clarified underneath one by one.

As indicated by IEEE standard DOI 10.1109, the emergency vehicle can be effectively cross all the activity intersections without holding up over that movement intersection. Furthermore the smooth stream towards the doctor's facility is accessible. This is conceivable by showing the repetition towards doctor's facility in the emergency vehicle.There are might be a few ways are accessible to come to the doctor's facility. However, here the most limited course is shown in a rescue vehicle, so that the driver got the smooth stream towards the clinic and helps patient to achieve healing facility quickly furthermore, take as much time as necessary out. In this the server keeps up a database for every hub and controlling them,the GPS co-ordinate is likewise put away. In this manner in light of this the rescue vehicle is guided to healing center. This entire framework is worked under the GPS and GSM framework. GPS is utilized to demonstrate the up and coming crisis vehicles. What's more, GSM is utilized here to make association with crisis vehicles and activity intersection. Be that as it may, the one issue is exists here. Which is the postponement is coming in exchange of message by means of GSM. Since the GSM is a line based method, so more time it was taken for exchanging a message. So we need to think the option method for this. [1] K. Athavan and G. Balasubramanian states that this framework is useful for the emergency vehicle, as well as additionally it would be useful for all the another crisis vehicles like Fire unit, police van and VIP vehicles.

In IOSRJEN [2], K.Sangeetha, P.Archana, M. furthermore, P. Ramya examines the need to meet a brilliant movement light framework.They wrote in this paper, at whatever point a crisis vehicle is close to movement intersection, than as per programming done the movement signal swung to green light. Be that as it may, I surmise that the after the green sign ON, nobody will sit tight for an emergency vehicle. Everybody begin to go, and by along these lines the emergency vehicle couldn't be go as quick as possible. In any case, I feel that, the patient in first coming emergency vehicle does not require dire consideration and the patient in next coming rescue vehicle require

earnest recuperation, so in that circumstances FIFO won't work. We need to think another thought for defeating such an issue.

In CIEEE standard 2008 [3], as a sensor Infrared transmitter and beneficiary is utilized for identifying the up and coming crisis vehicles. In any case, the issue in that is the Infrared is transmitted in straight line. The creators additionally propose its arrangement, which is by utilizing of Radio recurrence it is transmitted in range. They likewise propose that rather than utilizing LED with the end goal of activity sign, utilize the laser which has most elevated bar width. So that the sign which can be transmitted in longer range.

4. Equipment Architectures

The design of this framework is separated in two frameworks.One of them is fitted in emergency vehicle, so it is called an emergency vehicle framework. Also, another is fitted at activity intersection. With the goal that it is known as an activity intersection unit. The both frameworks are clarified in fig's 1&2.
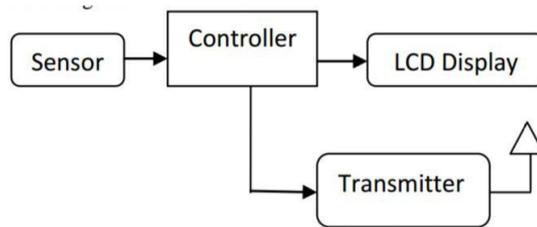

Fig. 1 Ambulance unit.

From fig.1 emergency vehicle unit which comprises of a sensor and it is utilized for recognizing a forthcoming crisis vehicle[6].In the wake of distinguishing send this sign to the controller. What's more, after handling send this sign to the remote transmitter. This transmits the sign through a recieving wire to the Receiver on the flip side intends to the activity intersection unit[8]. Here the LCD presentation is utilized. In that the course towards destination is shown in crisis vehicle. The advantage of that is get to the driver of a crisis vehicle.
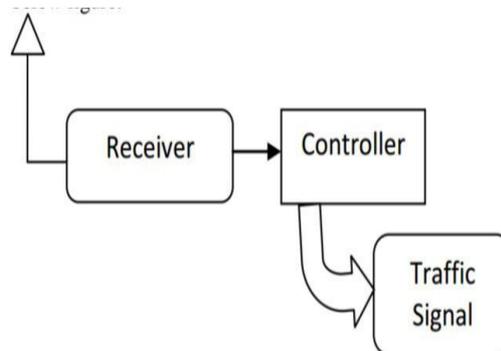

Fig. 2 Traffic junction unit.

From fig.2 recipient will get the transmitted information and send it to the controller. Controller is controlling all other parts. What's more, as indicated by got information give the guideline that the path on which rescue vehicle is coming,turn the green signal on in that lane. So by this way the first priority is given to the EMERGENCY Vehicles.

4.1 Late Publications and Guidelines

Till now the movement of India is expanding a step by step. So the real idea appeared is to control the movement intersection so as to not influenced and all issues can be overcome. No questions,rescue vehicle couldn't need to attend to the activity intersection notwithstanding when the movement sign is red. The Bangalore city thinks to actualize a movement control framework one might say of crisis vehicles. In a portion of the zone this framework is officially executed before couple of months.

The working of movement control in that city is, at whatever point a crisis vehicle is goes through movement intersection than the activity intersection was identify this crisis vehicle and controlling the movement signal one might say that to turn on the green shading of that movement intersection. So by thusly the crisisvehicle goes through that intersection and does not need to hold up till the course clear

5. Conclusion and Future Scope

The vehicle characterization framework is utilized to computerize the procedure of movement checking framework by making recognizable proof furthermore, arrangement of moving vehicles on street. The framework utilizes LABVIEW for picture preparing of vehicle test pictures. Programmed activity thickness estimation and vehicle characterization through video handling is vital for activity administration particularly in uber urban areas. With programmed movement signal control in light of the activity thickness in the course, the manual exertion with respect to the activity policeman is spared.

As the whole framework is robotized, it requires exceptionally less human intercession. In the event that they invest a great deal of energy in roads turned parking lots, valuable existences of numerous individuals might be in threat.With crisis vehicle leeway, the activity signal swings to green the length of the crisis vehicle is holding up in the activity intersection.

The sign swings to red, simply after the crisis vehicle goes through. Further upgrades can be done to the VI by testing it with RFID perusers. Additionally GPS can be set into the crisis vehicle discovery VI, so that the accurate area of crisis vehicle is known. At present, we have executed framework by thinking of one as street of the activity intersection. It can be enhanced by reaching out to every one of the streets in a multi-street intersection.

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