

TRAFFIC CLEARANCE FOR AMBULANCE USING TCP/IP PROTOCOLS

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Abstract—As we all know that traffic management on the road has become a severe problem of today's society because of growth of population and it causes delay to ambulance so that they won't reach the hospitals in time. This in turn causes harm to the patient who is inside the ambulance. To solve this problem, traffic is to be controlled whenever ambulance arrives at the junction so a green signal is to be given along its path. This can be achieved by TCP/IP protocols technology and hence an efficient ambulance controlled traffic system using TCP/IP protocols technology with LabVIEW simulation is proposed.

Keywords:-LabVIEW.

I. INTRODUCTION

According to the project when the ambulance is at emergency comes to in any junction the traffic signals automatically stops the signals and give green signal for the ambulance.

When the ambulance at emergency comes to any junction the traffic signals automatically stop the signal. The road accidents in modern urban areas are increased to uncertain level. The loss of human life due to accident is to be avoided. Traffic congestion and tidal flows are major facts that cause delay to the ambulance. To bar loss of human life due to Accidents to we introduce a scheme called Traffic clearance for ambulance using TCP/IP protocols.

The main theme behind this scheme is to provide a smooth flow for the emergency vehicles like ambulance to reach the hospitals in time and thus minimizing the delay caused by traffic congestion. The idea behind this scheme is to implement Traffic clearance for ambulance using TCP/IP protocols technology which would control mechanically the traffic lights in the path of the ambulance.

II. TCP/IP PROTOCOLS

TCP LISTEN FUNCTION

When a listen on a given port begins, you cannot use another TCP Listen VI to listen on the same port. For example, if a VI has two TCP listen Vis on its block diagram and you start a listen on port 2222 with the first TCP listen VI, you cannot listen on port 2222 with the second TCP Listen.

TCP OPEN CONNECTION

When wiring an unused IP address, you may receive an error stating the network operation exceeded the user- specified or system time limit. This error before the default time out of 60000ms has occurred. To correct this error, wire an IP address that is running and listening on the port you are trying to use.

TCP READ FUNCTION

This reads bytes from the remote computer. There are the usual inputs, the Connection ID and Error signal. The integer input is the number of bytes that you want to read. The output is the string composed of the bytes that are read.

TCP CLOSE CONNECTION

It closes a TCP network connection. It uses the connection ID as a network connection refnum that uniquely identifies the TCP connection you want to close.

Error in describes Error Condition that occurred before this node runs. This node runs normally even if an error occurred before this node runs.

Connection ID out has the same value as Connection ID. Error out is a output that provides standard error out functionality.

TCP/IP WRITE FUNCTION

This writes data to the other computer over the network. The TCP/IP write uses the connection ID, which it also passes to the next VI, and the Error Signal, which it also passes to the next VI The input is a string. It's much harder to use numerical information directly, so you will have to convert your data to a string format.

There are other inputs and outputs which we have ignored, but you can specify the timeout, and you can get information on number of bytes written over the network with this VI.

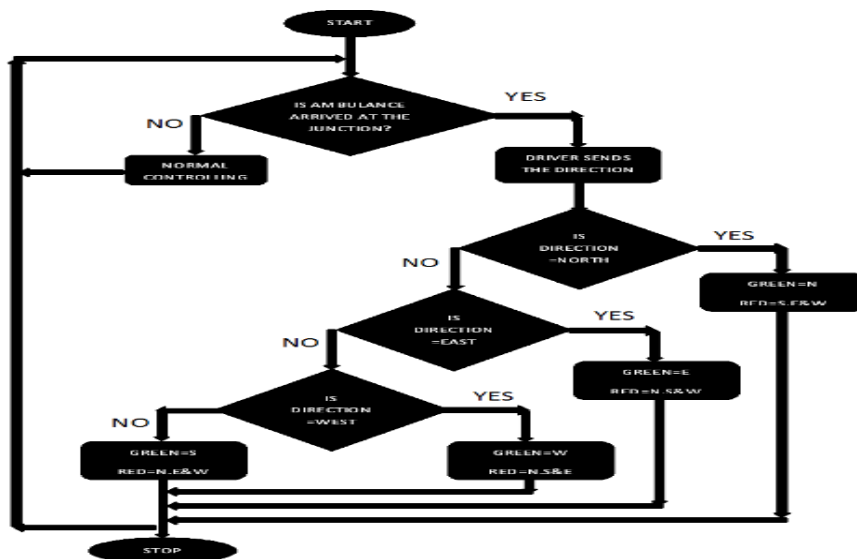
III. WORKING

Block Diagram



Fig. Block diagram of traffic clearance for the ambulance.

Flowchart



Steps involved in the above flow chart are:

1. First traffic is operated in normal condition. If ambulance arrives at the junction then go to step2, Otherwise go to step 1.
2. Driver sends the direction code like (00-NORTH, 01-EAST, 10-WEST & 11-SOUTH), in which direction he wants to go.
3. If driver sends 00 codes, in north direction he will get the GREEN signal and in other directions he will get RED signal. Otherwise go to step5.
4. If driver sends 01 code, in east direction he will get the GREEN signal and in other directions he will get RED signal. Otherwise go to step 6.
5. If driver sends 10 code, in west direction he will get the GREEN signal and in other directions he will get RED signal. Otherwise go to step 7.
6. If driver sends 11 code, in south direction he will get the GREEN signal and in other directions he will get RED signal. Otherwise go to step 1.

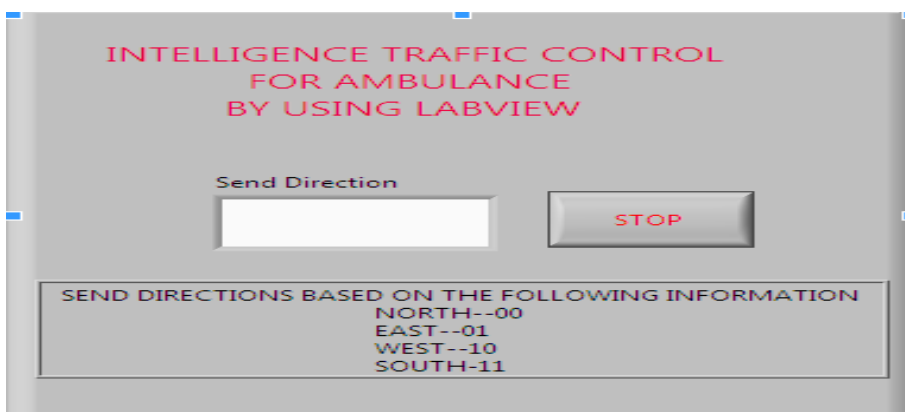
NI myRIO is connected to the traffic system it acts as a receiver. The transmitter is placed inside the ambulance and receiver is kept at the traffic signals.

Transmitter inside the ambulance sends two bits of information like (00,01,11 and 10) to identify the direction of ambulance is moving in NORTH,EAST,SOUTH and WEST respectively.

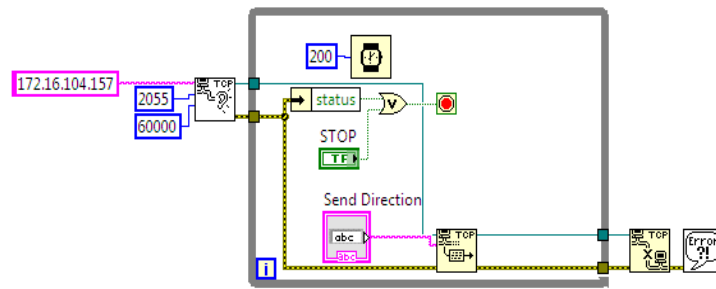
This information is received by the receiver and sends to the myRIO. It analyze the received information and gives green signal for ambulance in which direction it wants to go and red signal for other directions to stop the traffic in other directions.

IV. RESULT

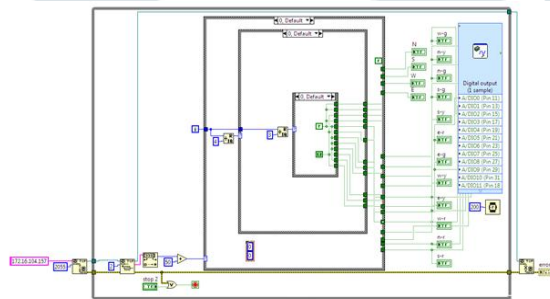
1. The front panel of the project is shown in the below figure.



2. Whenever ambulance entered at a junction, driver sends the specific code to go to the required direction by using the **send direction Button** in the front panel'.
3. To send the direction, specific codes are assigned for every direction.
4. The Block Diagram for the above front panel is shown in below.



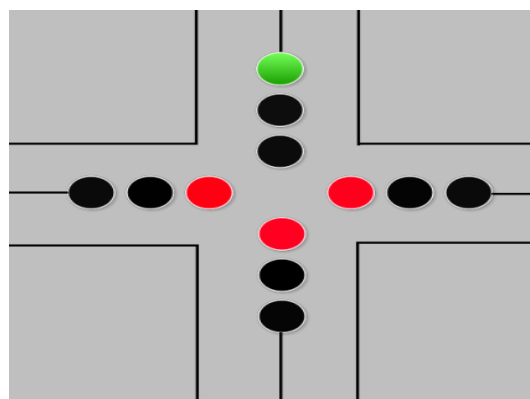
5. IP ADDRESS of the receiver system is given TCP LISTENER in the front panel.
6. TCP LISTENER checks the receiver system based on the value given to the timeout case.
7. If the connection is not established it returns error 56 and stops the execution.
8. The port value given to the TCP LISTENER must match with the receiver system's TCP OPEN CONNECTIONTERMINAL and ten only it receives the correct information.
9. Block diagram of the receiver system is shown below.



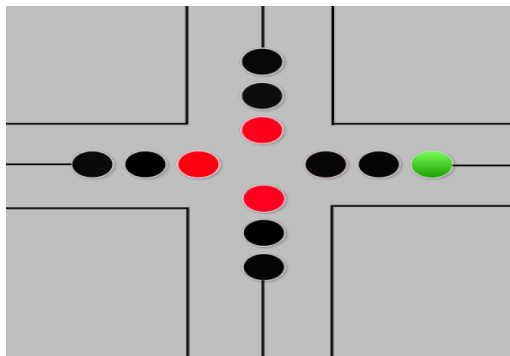
10. TCP READ FUNCTION reads the direction from the transmitter system when the two systems are connected via IP ADDRESS and port values must match.
11. TCP WRITE function receives the direction and sends to the TCP READ function in receiver system.
12. Based on the direction received traffic lights are arranged using myRIO.
13. THE FRONT PANEL of receiver system is shown below.



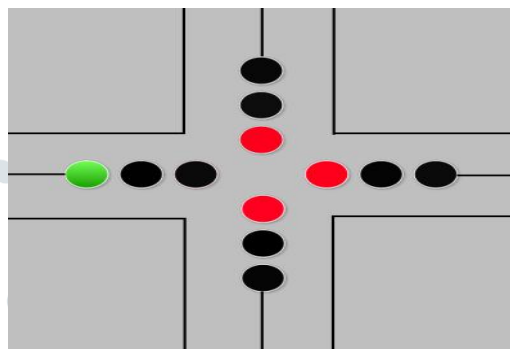
14. If the driver sends the 00 code i.e., north direction.myRIO gives the green signal in north direction and red in other direction.



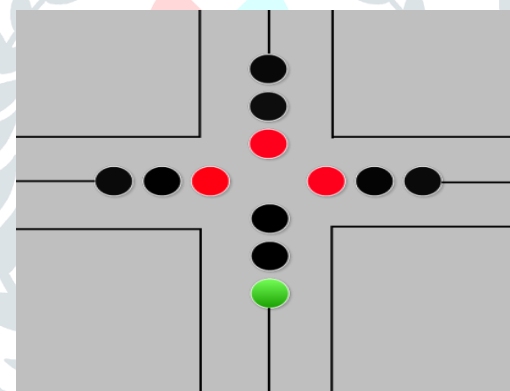
15. If the driver sends the 01 code i.e., east direction, myRIO gives the green signal in east direction and red in other directions.



16. If driver sends the 10 code i.e., west direction, myRIO gives the green signal in west direction, red in other directions.



17. If driver sends the 11 code i.e., south direction, myRIO gives the green signal in south direction, red in other directions.



V. CONCLUSION

All developed nations have a well-developed transportation system with efficient traffic controlled on road, rail and air and transportation of goods industrial products, man power and machinery are the key factors which influence the industrial development of any country. Mismanagement and traffic congestion results in long waiting times, loss of fuel and money. It is therefore utmost necessary to have a fast, economical and efficient traffic control system for National development. The monitoring and control of city traffic is becoming a major problem in many countries. With the ever increasing number of vehicles on the road, the traffic monitoring authority as to find new methods of overcoming.

This system will definitely help to traffic police to give the way to the ambulance when there is heavy traffic on the road. Also the condition of patient is monitored and this information is sent to the respective doctor so that doctor can prepare for the next processes before the patient reach the hospital. The design and implementation of this technique is directly targeted for traffic management so that emergency vehicles get clear way to reach their destination in less time and without any human interruption.

V. FUTURE SCOPE

With the increase in traffic road in traffic road density, several causalities occur due to delay in taking a patient to the hospital in an algorithm to find the shortest path to reach the required destination. Further we will made the traffic signals automated for special vehicles like an ambulance or a fire-engine such that the signals will go green for the ambulance as it comes in the vicinity of the traffic signal, thus providing them with a clear path to reach its destination. The original signal is restored as soon as the ambulance goes undetected by the ZigBee Receiver of the traffic signal.

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