ISSN 2395-1621

Smart Traffic Control Ambulance System

[#1]Isha Awhale, [#2]Swapnali Vikhe, [#3]Sanjog Adhav, [#4]Durvankur Gaikwad,
[#5]Prof. Shriganesh Mane

[1]ishaawale@gmail.com
[2]swapnalivikhe2000@gmail.com
[3]sanjogadhav37@gmail.com
[4]durvankurgaikwad214@gmail.com

[#12345]Department Computer Engineering,
JSPM's, Wagholi, Pune, India.

ABSTRACT

Traffic jams is one of the crucial issue in India due to which ambulance services get affected on large amount, due to delay in ambulance service, patient may lose his life and number of these scenarios are getting increased day by day. In smart ambulance different sensors like RFID reader, RFID Tag, ESP8266 controller simultaneously traffic signals will be operated by using RFID technology. As the smart ambulance will reach within range some meter, signal will be turned to green if it is red, the communication between smart ambulances will be done by Wi-Fi network through wireless network.

Keywords: Smart traffic control, Smart ambulance, RFID reader, ESP8266.

ARTICLE INFO

Article History

Received: 17th February 2020

Received in revised form :

17th February 2020

Accepted: 19st February 2020

Published online :

19th February 2020

I. INTRODUCTION

By considering the current heavy traffic conditions in India, in emergency situations like body part transplants, road accidents, etc. ambulance service gets highly affected. People die due to not getting proper and timely treatment which is a serious issue. In emergency situations time is a very important factor, so we have proposed a system to encounter this problem.

Our system i.e. 'smart traffic with ambulance', for ambulance gives a special path in which all the red signals will be turned to green for the ambulance which helps the ambulance in reaching its destination within time. Generally the ambulances pick up the patients and take him to the hospital, after reaching the hospital, the actual treatment starts. In this so much time is wasted and the patient might lose his life. Our system continuously analyze vital health parameters of the patient like blood pressure, heart rate, body temperature in the ambulance itself and send it to the hospital's database while reaching the hospital, so the hospital authorities will know what Type of treatment to be given to the patient, saving so much time which ensures to save patient's life.

In this system, we are implementing smart ambulance system web Based Medical System. This system was implemented based on present criteria that tracking patient health records and another one is making traffic monitoring during the emergency ambulance using IoT. In this way it acts like a life saver project as it saves time during emergency.

II. LITERATURE SURVEY

In the era of smart cities, people face many problems regarding health issues like not getting aid on time or doesn't get quick facilities or delay in healthcare service. To overcome these situations, system describes a solution concept called 'Intelligent Ambulance with traffic control. This concept describes monitoring health parameters accessed by different sensors deployed on patient's body and transferring these to hospital system. At the same time traffic signal lights are monitored by driver of ambulance to reach to hospital as early as possible. RF communication is used for traffic controlling purpose. While designing algorithm to control traffic lights traffic density isalso considered. [1]

Traffic is the biggest problem in India. It is very important to clear the traffic in case of any emergency. Vehicles are increasing day-by-day on a large scale in India that's why

© 2019, IERJ All Rights Reserved

traffic problem is increased. Author used RFID tag which will be read by RFID reader for detecting a vehicle. With automatic traffic signal, traffic will be automated based on traffic volume. It will also detect stolen vehicles & will clear the path for emergency vehicles like ambulance, fire trucks etc. [2]

Time is very critical factor to get to the incident sight as quickly as possible by emergency vehicles (EVs) and save the life of the people. WheneverEV comes in the range of signal coordinates a pre-emption request should be granted due it normal traffic would be effected. In this paper, they have used emergency vehicle-signal_ coordination (EVS-C) it will detect EVs and send the request to traffic signal controller, if the controller approve request the normal traffic will be pre-empted. [3]

Currently we come to face a very common yet annoying issue in the world i.e. Traffic jams on the roads. Traffic jams during rush hours is very serious issue as emergencies like Police chases, Fire brigades or Ambulances may get stuck which might be life threatening. Here, a system is developed with the help of accelerometers, Zig-Bee, GPS and GSM modules to encounter the proposed problem. A system is developed with GSM and GPS system which detects the exact location of vehicles under emergency which is detected with the help of accelerometer to determine the state of the vehicle. This system is fully automated, so it was able to operate spontaneously right from detecting the vehicle under emergency to helping it to reach the hospital in time and safely. [4]

III. EXISTING SYSTEM

- Existing system is lengthy and time consuming.
- Once any hardware fail then all system fails.
- Traffic not clear during the ambulance coming because of traffic control not knows where the ambulance is arrived.
- Existing system not check any patient health problem analysis during ambulance traveling.

IV. PROPOSED SYSTEM

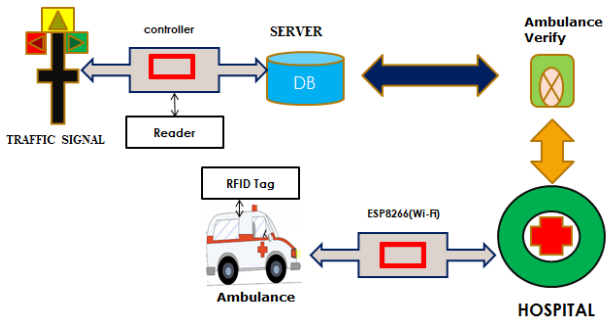

Fig 1. System architecture

A. System Flow

This system consists of health analysis and traffic control system in an ambulance, signal, and a network (Fig.1). We designed the RFID based technology to detect the ambulance before traffic signal for clear the signal to fast reach at the hospital.

Hardware Component:

1. **ESP8266**

Fig 2. Wi-Fi model

Feature:

- Voltage:3.3V.
- Wi-Fi Direct (P2P), soft-AP.
- Current consumption: 10uA~170mA.
- Flash memory attachable: 16MB max (512K normal).
- Integrated TCP/IP protocol stack.
- Processor: Tensilica L106 32-bit.
- Processor speed: 80~160MHz.
- RAM: 32K + 80K. • GPIOs: 17 (multiplexed with other functions).
- Analog to Digital: 1 input with 1024 step resolution.

2. **RFID Reader**

Fig 3. EM-18 Reader

Feature:

- Voltage: 5VDC
- Current: <50mA
- Operating Frequency: 125Khz
- Read Distance: 10cm
- Size: 32mm(length) * 32mm(width) * 8mm(height)

3. **RFID TAG**

Fig 4. RFID tag

© 2019, IERJ All Rights Reserved

Feature:

- Highly efficient
- Stringently tested for their quality
- Highly reliable

V. CONCLUSION

This work is developed with a main intension of saving the life of a person. Whenever an accident occurs and any serious condition take from home that time, the ambulance take that person to traveling to admit in hospital during that the traffic is cleared for the smooth and fast running of the ambulance.

VI. FUTURE SCOPE

The system does not give the shortest path to the hospital neither does the signal change automatically. The system is more manual than automatic. In the future scope, this system could be made completely automated as it could find the shortest path to the nearest hospital and if the ambulance halts at the signal, then the signal changes automatically according to the shortest path to the hospital. This saves more time and the patient is taken to the hospital in minimum time possible.

REFERECNES

[1] G. Beri, P. Ganjare, A. Gate,A. Channawar, Vijay Gaikwad, “Intelligent Ambulnce with Traffic Control”, in International Jour. of Elect, Electronics and Comp Systems, vol. 4 , pp 43-46, Feb. 2016.

[2] R. Sundar, S. Hebbar, and V. Golla, “Implementing Intelligent Traffic Control Syst for Congestion Control, Ambulance Clearence, and Stolen Vehicle Detectioning”, in IEEE SENSORS JOURNAL, vol. 15, pp 1109-1113, Feb. 2015.

[3] W. Kang, G. Xiong, Y. Lv, X. Dong, F. Zhu, Q. Kong, “Traffic Signal Coordination for Emergency Veh.”, in IEEE 17th International Confrence on Intelligent Transprtation System (ITSC), pp 157-161, 2014.

[4] Joshua, S. Rao, N. Rao. “An Intelligant Ambulence Traffic Signal Control System” in International Jour of Engg. and Computing, ISSN-2321 -3361, pp 10131018, Dec. 2014

[5] T. Mickus, P. Mitchell, T. Clarke, “The Emergence MAC (E-MAC) protocol for wireless sensor networks”, in Engg. Applications of Artificial Intelligence, vol. 62, pp. 17-25, 2017.

[6] M. A Kumaar, G. A Kumar and S.M. Shyni, Advanced Traffic Light Control System Using Barrier Gate and GSM, In the proceedings of 2016 International Conference, Computation of Power, Energy Information and Communication (ICCPEIC), 2016.

[7] SK Riyazhussain, Riyazhussain, C.R.S. Lokesh, P.Vamsikrishna and G Rohan, Raspberry Pi Controlled Traffic Density Monitoring System, In proceedings of 2016 International Conference, Wireless Communications, Signal Processing and Networking (WiSPNET), 2016.

[8] P Maheshwari, D Suneja, P Singh and Y Mutneja, Smart traffic optimization using image processing, in proceedings of 2015 IEEE 3rd International Conference, MOOCs, Innovation and Technology in Education (MITE), 2015].

[9] L Bhaskar, A Sahai, D Sinha, G Varshney and T Jain, Intelligent Traffic Light Controller Using Inductive Loops for Vehicle Detection, in proceeding of 2015 1st International Conference, Next Generation Computing Technologies (NGCT), 2015.

[10] E Shaghaghi, A Jalooli and R Aboki, Intelligent traffic signal control for urban central using Vehicular Ad-Hoc Network , in proceedings of 2014 IEEE Asia Pacific Conference, Wireless and Mobile, 2014.

© 2019, IERJ All Rights Reserved