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Review On: Development of an Effective Accident Detection and Ambulance Rescue System

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Abstract: ***We noticed that nowadays, the death rate due to accident has increased in huge amount, especially accident which will occur on highway. There is no technology for accident detection till now. It is very important to design such a system which reduce loss of life due to accident by observing all that drawbacks. We want to design a system for automatically accident and ambulance tracking through sensor. Sensor plays major role in this system by sensing whether accident has occurred or not and send notification to ambulance. After receiving information about accident, GPS and GSM send location of accident to database server. Database server will provide information to ambulance relating to nearest hospital about accident location by using this system. Thus,the rate of death due to accident can be avoided by using proposed system.***
Keywords: IOT, GSM, GPS, Vehicular Sensor, Accident Spot, Biometric.

I. INTRODUCTION

There are different sensors are available for detecting various condition .It is based on sensor. In this project there are three different units we implemented which communicate among each other .The first unit is vehicle unit, which is used for the detection of accident. Ambulance unit is the second unit which is used to check the parameter of the accident victim. In this unit we designed ECG & heartbeat sensor using op amp IC 741.

The communication between vehicle & ambulance takes place via GSM module. Third unit is hospital unit. In this the parameter of accident victim like heartbeat, ECG, blood pressure & temperature checked by ambulance unit is displayed continuously on HyperTerminal software used in hospital PC using CC2500 RF module. So the doctors can take immediate action, thus the delay of treatment on accident victim due to distance is minimized & the death due to delay in reaching the ambulance to the hospital can be reduced .

The ARDIUNO system is used to alter the traffic lights upon its arrival at traffic light junction which would save a lives at critical time. To avoid unnecessary traffic signal changes. In the current situation itself, transportation of a patient to hospital in emergency conditions seems quite simple but in actual it is very difficult during peak hours. Moreover, the situation is gets worse when emergency vehicles have to wait for other vehicles to give way at intersections with traffic signals. As the survey is 95% of the heart attack cases can be treated, if the ambulance can reach the hospital at current time without stucking into the traffic. In future it may get even worse.

In this cause Recovery action need to be taken immediately. So, for our over populated environment, there is a real need for this paper for the society to make easier day to day transportations. This paper will help to reduce blockage of emergency vehicles in traffic and helps to provide immediate recovery.

Mobile app to authenticate emergency and non-emergency conditions of ambulance. GPS to track the nearest traffic signal post to the ambulance and to send the app data to that particular signal post. The main goal is sharing of information between patient and hospital. This information involves patient's medical data, current condition and the most important thing location of ambulance. When the patient or his career has exact idea when the ambulance is arriving, they can take proper action according to feedback received. Similarly if the hospital knows when the patient is arriving, they can prepare for it efficiently. The sensor is capable of sending ambulances location to a server, from where it can be accessed by the hospital and the patient. This is the core part of the proposed Ambulance Tracking System (ATS), which provides real time location updates of ambulance to the hospital and to the patient who has requested the ambulance. In addition to this, the system also provides the functionality of sharing patient's medical data with hospital, so they can take proper measures beforehand.

II. LITERATURE SURVEY

Sr. No	Paper Title	Name Of Author	Year Of Publication	Problem in existing System	Solution to existing System
1	A survey on wearable sensor-based systems for health monitoring and prognosis	A.Pantelopous and N. Bourbakis,	2010	Increasing healthcare costs and propelled by recent technological advances in miniature biosensing devices, smart textiles, microelectronics, and wireless communications.	Wearable systems for health monitoring may comprise various types of miniature sensors, wearable or even implantable. These biosensors are capable of measuring significant physiological parameters
2	Health .Monitoring and Management Using Internet-of-Things (IoT) Sensing with Cloud-based Processing: Opportunities and Challenges	Moeen Hassanalieragh, Alex Page	2015	Doctor has available not only conventional clinic/lab-test based static measurements of our physiological and metabolic state.	Wearable sensors, particularly those equipped with IoT intelligence, offer attractive options for enabling observation and recording of data in home and work environments
3	Automatic Accident Detection And Ambulance Rescue With Intelligent Traffic Light System	Mr. S. Iyyappan 1, Mr.V.Nandagopal2	2013	Delay to Ambulance causes due to Traffic congestion and tidal flow.	Introduce ITLS (Intelligent Traffic Light System).
4	Intelligent Accident-Detection And Ambulance-Rescue System	Bhandari Prachi, Dalvi Kasturi, Chopade Priyanka	2014	Ambulance takes more time for reaching at accident spot. Due to this there is chances of death of victim.	By using vehicular sensor System detect accident and provide ambulance in less time.
5	Efficient Accident Detection and Rescue System Using Abeona Algorithm	V Praveena1, Adithya Raam Sankar2, S Jeyabalaji3 and V Srivatsan4	2014	Lack of proper communication to emergency services.	System Automatically notifies emergency services about accident.
6	Automated Accident Intimation and Rescue System for Vehicles	1Supriya Sawwashere, Ashutosh Lanjewar2	2015	Due to Heavy traffic Ambulance can't reach to destination in less time.	Wireless Sensor Network is used to control Traffic load on roads.
7	Automatic Accident Detection and Rescue with Ambulance.	Hrishikesh Murkut1, Fazal Patil2, Vishal Yadav3, Meghana Deshpande4	2015	Existing systems are not provide quick emergency help to the accident victims.	System is simulated using 'PROTEUS Software'. Alert system with SMS to user defined mobile numbers.
8	Automatic Accident Detection and Ambulance Rescue System.	Mr. Sahil Gadroo1, Mr. Pinkesh Jodhwani2, Mr. Gunveer Singh3, Mr. A. D. Londhe4	2016	Ambulance takes more time for reaching at accident spot. Due to this there is chances of	In system there would be control of traffic lights which can come in the path of the ambulance using RF

				death of victim.	communication by the ambulance driver.
9	Accident Detection & Ambulance Rescue System Using Wireless Technology.	Pooja Dagade1, Priyanka Salunke2, Supriya Salunke3 ,Seema T. Patil4	2017	When accident occurred at the night time and near the highways that accident is unnoticed by the people due to problems due to police case.	System presented to detect accident automatically using vibration sensor, and ambulance unit send the vital parameter of patient to the hospital.
10	Smart Ambulance Rescue System with Patient Monitoring.	Vidya Bangar1, Nikita Chaskar2, Sayali Kurhade3, Dr. Borhade B. M.	2017	Delay to Ambulance causes due to Traffic congestion and tidal flow.	Introduce Smart EHospital Management System for Complete Automation of Patient Health.

III. PROBLEM STATEMENT

The objective of proposed system is to implement a system where detection of accident should identified automatically by using vehicular sensor system which are embedded in vehicles, and ambulance tracking for reducing death rate. This can be achieved by using GSM,GPS technology.

IV. SYSTEM ARCHITECTURE

The system consists of an end to end smart health application that can be building up from three functional building blocks. If a vehicle has met accidents, immediately an alert message with the location coordinates message is sent to the nearby ambulance. The vehicle accident observed using vibration sensor and in the control section it is received by the microcontroller and then the nearby ambulance is received from the pc. Main function of the first building block is to gather all sensory data that are related to the person's information by using the thumb impression, whereas the second block functions are to store, when the ambulance is going if in case the traffic is present than automatically signal goes blue so the ambulance can easily go to the hospital. In the proposed system it saves the patient's time and in some accident person body not identiied in this situation by using thumb impression we can find out person information. The function working is illustrated as, when the patient's heartbeat rate changes badly, the arduino which recorded all the patient's information, gsm shield to send an sms message containing this information, patient id and the location of the patient which has been taken via GPS shield, to his doctor's mobile phone, who -by his turn send an ambulance to the patient's location.

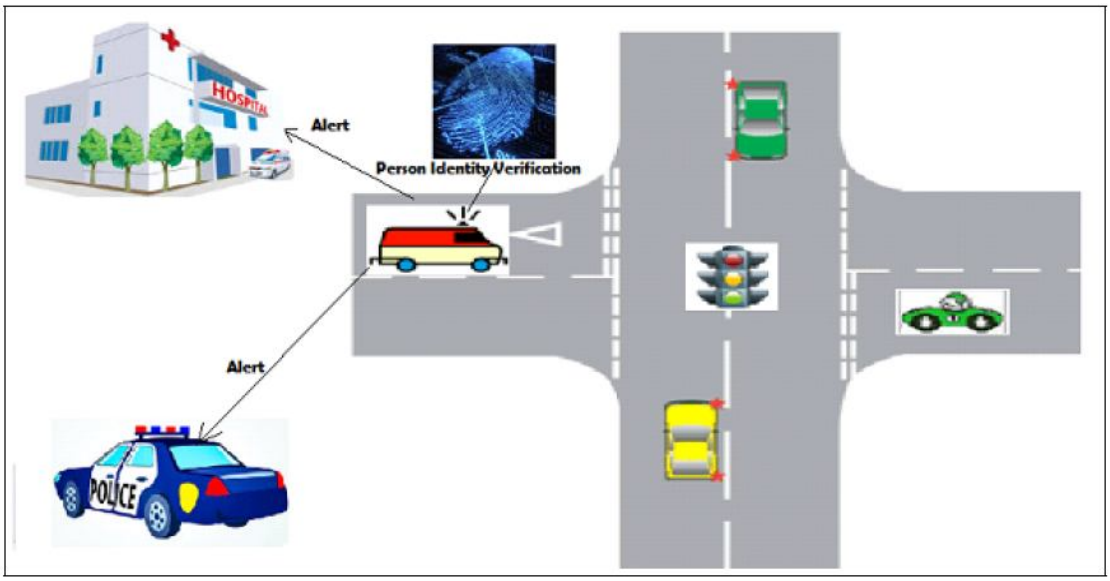

Figure 1. System Architecture

V. MODULES

Proposed system mainly consist of four modules

A. Module 1: Hospital

The time between contacting hospital and when the ambulance delivers patient to hospital is very crucial. In many cases the doctors don't know what is wrong with patient till he reaches the hospital or sometimes it happens that when the patient reaches' hospital it is found that some required medicine or tools are not present which are required for treatment. This is very much the scenario in developing countries. This gap in information sharing can sometimes prove to be fatal. In such situations it is better to utilize the time of transportation of patient to gather information about him/her so that the hospital can prepare beforehand for any emergency. The doctors can know exactly what is wrong with the patient while he is being transported and procure any required tools or medicine in that time. Utilizing this gap in exchange of information to do useful tasks can impact lives of many, who might have suffered in case there was delay in communication. In the proposed system we can easily monitor the patient.

B. Module 2: Fingerprint

A fingerprint in its narrow sense is an impression left by the friction ridges of a human finger. In our system we can use fingerprint for getting person information like name, blood group, previous medical history etc. By using thumb impression we can get patients information easily.

C. Module 3: Vehicular Sensor

Vehicular sensor is used for accident detection which consist of ultrasonic sensor

D. Module 4: Registration

In the registration first all doctors, people and patient register to the system.

VI. CONCLUSION

This system will reduce accidents which often happen at the traffic signal intersections because other vehicles have to huddle to give way to the ambulance services. This system detect accident automatically using vibration sensor, and ambulance unit send the vital parameter of patient to the hospital. This will help to save the life of accident victim, system is useful for critical patient information easily find out. It provides transportation unit information and as well as patient health information, which is useful in further emergency treatment for doctors. The Ambulance tracking system can help in saving many lives. It can also send current location using GPS system to the server database. The server in turn sends location and status information to the doctor.

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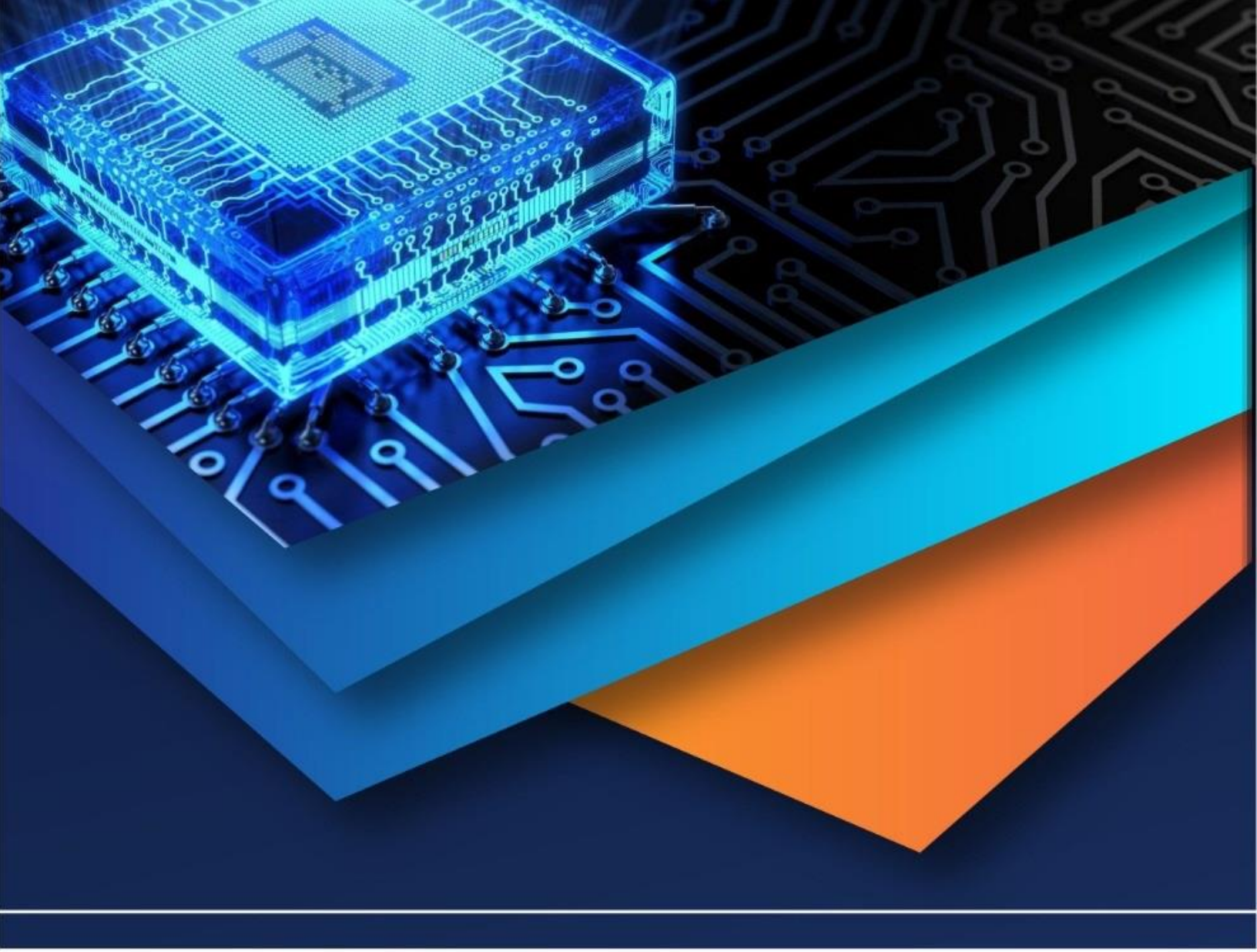

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