

# Automatic Traffic Signal Controlling For Ambulance And Patient Monitoring Data Transfer Using IOT System

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**Abstract :** This paper purpose the system in which the combination of controlling traffic light system and monitoring patient data using wireless communication over the GSM and display the data over the server. Today we are facing problems of traffic India due to these emergency vehicles trapped in traffic, this cause the traffic jam at the traffic junctions which in turn causes delay to ambulance and it causes loss of life. In order to overcome this problem, this paper presents a simple ambulance controlled traffic system. The main objective of this system is that to control the traffic, allowing an ambulance to arrive at a particular location without it having to stop anywhere until the destination is reached. This system includes RFID technology. Also to monitor the patient data continuously and pass the information over the GSM to the server and get the basic patient basic information before admit, it helps the patient getting immediate service.

**Index Terms - IOT, GSM, RF trans-receiver, TLC, REU, NEF, ZIG-Bee, and RFID**

## I. INTRODUCTION

In country like India there is increase in population day by day, there is a lot of need to increase the efficiency and speed of medical services. This project leads to get the patient fast emergency medical services using the electronic embedded system, this project divided in to two parts,

1. Clearing the way of ambulance get the ambulance, by controlling the signal.
2. Transfer the patient monitoring data to the website by using IOT system

Today increasingly growing number of people with chronic diseases, this is due to different risk factors such as dietary habits, physical inactivity, and alcohol consumption, among others. According to figures from the World Health Organization, 4.9 million people die from lung cancer from the consumption of snuff, overweight 2.6 million, 4.4 million for elevated cholesterol and 7.1 million for high blood pressure. It is said that in the next 10 years, deaths from chronic diseases will increase by 17%, which means in figures of about 64 million people<sup>1</sup>, Chronic diseases are highly variable in their symptoms as well as their evolution and treatment. Some if not monitored and treated early, they can end the patient's life. Among the most common chronic diseases that can be treated and monitored are diabetes, blood pressure, cardiac arrhythmial Patients with these diseases besides having limitations in their physical condition, also often have economic, emotional and social relations problems, among others. Patients often take time to adapt and accept the reality of disease long-term because disability.

## II. Background of invention

- In India in year about 50,000 to 65,000 peoples died due to not getting emergence medical service
- Our system firstly clear the roadways to catch the hospital in minimum time
- When patient is in ambulance every time it is not possible to have a medical expert in a ambulance to check the patient conditions and when patient reach to the hospital about 10 minutes require to check patients basic medical parameters, this time is very important for the patient to get the medical services.
- to get this medical services emergency to the patient and to save the time this concept is designed

## III. Objective of the project:

Objective of the project is as under;

1. to study the wireless technologies of patient monitoring transfer system,

2. To implement the patient monitoring system and transfer of data over IOT.
3. To study and implementation of traffic signal controlling system.

#### IV. LITERATURE REVIEW

Ahmed, Sabrin Millat, MD. Aymanur Rahman, Sayeda Naeyna Alam, Md. Saniat Rahman Zishan, Wireless Health Monitoring System for Patients, e-Health is the provision of healthcare with the inclusion of telecommunication techniques. This project looks at the construction of a simple device that will be capable of transferring the data of a patient's vital signs to a remote device wirelessly. The necessity of this project is to alleviate the difficulty that is encountered by medical experts in monitoring multiple patients simultaneously. This project will enable them to observe patients without having to be physically present at their bedside, be it in the hospital or in their home. A patient's body temperature, heart rate and electrocardiography (ECG) are transferred wirelessly through an agent such as Bluetooth technology.

Alexsis Bell, Paul Rogers, Chris Farnell, Brett Sparkman, and Scott C. Smith, IEEE Senior Member, The current method of monitoring patients in hospitals keeps patients tied to their beds and can be uncomfortable for patients to wear. The number of nurses in the workforce is also expected to decline by 2020, causing strain in an environment where excess pressure can lead to

Unfortunate accidents happening to patients, the goal of this project was to produce a wireless patient monitoring system that could allow patients to be mobile in their environment. The developed system includes a pulse oximeter to measure blood oxygen concentration and the patient's pulse, as well as a temperature sensor to keep track of the patient's temperature. The proof of concept was successful, and allowed for multiple patients at the same time on the same network with the ability to add many more patients. This project was primarily undertaken by two undergraduate students during an NSF sponsored 10-week Research Experiences for Undergraduates (REU) summer program.

Istvan Bosznai, Ferenc Ender, and Hunor Santha, Web Server Based Remote Health Monitoring System, in this paper a new solution of a home monitoring system is presented. Home monitoring makes possible for the patient to measure different physical parameters at home, and for the physician to check the results anywhere without personal meeting. Contrary to conventional home monitoring systems, the realized system uses distributed data storage of patients' data, instead of using a remote server to store all the data. A fully functional home monitoring system has been realized, that contains a microcontroller based web server to store patient data. This unit collects data via Bluetooth from a small size wearable Electrocardiograph (ECG) device designed and constructed by the authors. The size of the realized web server is 9·11·3 cm - w·l·h, and the power consumption is only 2W the stored data can be accessed via internet. The remote client runs a Java application stored on the microcontroller based web server.

The physician uses this Java application to access and view patients' data in a remote location and to form a diagnosis.

Shilpa S. Chavan (Walke), Dr. R. S. Deshpande, J. G. Rana, Design of Intelligent Traffic Light Controller Using Embedded System, Present Traffic Light Controllers (TLC) is based on microcontroller and microprocessor. These TLC have limitations because it uses the pre-defined hardware, which is functioning according to the program that does not have the flexibility of modification on real time basis. Due to the fixed time intervals of green, orange and red signals the waiting time is more and car uses more fuel. To make traffic light controlling more efficient, we exploit the emergence of new technique called as "Intelligent traffic light controller". This makes the use of Sensor Networks along with Embedded Technology.

B ilal Ghazal, Khaled EIKhatib, Khaled Chahine, Mohamad Kherfan, Smart Traffic Light Control System, Traffic light control systems are widely used to monitor and control the flow of automobiles through the junction of many roads. They aim to realize smooth motion of cars in the transportation routes. However, the synchronization of multiple traffic light systems at adjacent intersections is a complicated problem given the various parameters involved. Conventional systems do not handle variable flows approaching the junctions. In addition, the mutual interference between adjacent traffic light systems, the disparity of cars flow with time, the accidents, the passage of emergency vehicles, and the pedestrian crossing are not implemented in the existing traffic system. This leads to traffic jam and congestion. We propose a system based on PIC microcontroller that evaluates the traffic density using IR sensors and accomplishes dynamic timing slots with different levels. Moreover, a portable controller device is designed to solve the problem of emergency vehicles stuck in the overcrowded roads.

Yi-Sheng Huang, Senior Member, IEEE, Yi-Shun Weng, and MengChu Zhou, Fellow, IEEE, Design of Traffic Safety Control Systems for Emergency Vehicle Preemption Using Timed Petri Nets, Timed Petri nets (TPNs) are useful for performance evaluation of discrete event systems due to their mathematical formalism. This paper focuses on their use to model the preemption of emergency vehicle systems. The advantage of the proposed approach is the clear presentation of traffic light behaviors in terms of conditions and events that cause the preemption of phases being changed. The resulting models allow one to identify and thus avoid urgent spectacles in such systems by conditions and events of the model that control the phase of traffic light alternations. Moreover, this work proposes a new emergency vehicle preemption policy to ensure that emergency vehicles can pass through

intersections with no or less delay. The analysis is performed to demonstrate how the models enforce the phase of traffic transitions by a reach ability graph with time information. The liveness and reversibility of the proposed model are verified.

Srijani Mukherjee, Koustabh Dolui, Soumya Kanti Datta, Patient Health Management System using e-Health Monitoring Architecture, This paper illustrates the design and implementation of an e-health monitoring networked system. The architecture for this system is based on smart devices and wireless sensor networks for real time analysis of various parameters of patients. This system is aimed at developing a set of modules which can facilitate the diagnosis for the doctors through tele-monitoring of patients. It also facilitates continuous investigation of the patient for emergencies looked over by attendees and caregivers. A set of medical and environmental sensors are used to monitor the health as well as the surrounding of the patient. This sensor data is then relayed to the server using a smart device or a base station in close proximity. The doctors and caregivers monitor the patient in real time through the data received through the server.

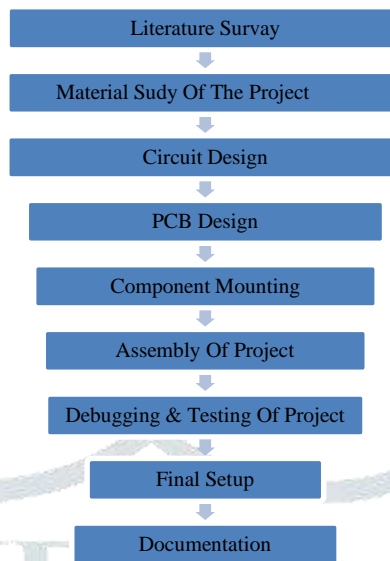
Sarmistha Neogy, Sayantani Saha, Developing a secure remote patient monitoring System, Cloud computing offers and allows users to use infrastructure, platforms, and software as services. With the advent of mobile computing, and cloud computing supporting mobile services, a merger of both these computing has opened a new domain of mobile cloud computing. Predictably, this has given way to a large number of issues coming forward, first and foremost among them, being, security. This paper develops a protocol suite that takes care of an entire mobile cloud computing (MCC) system with respect to a specific application area, Patient monitoring and providing subsequent medical care in remote areas is a problem. The proposal presented here considers the Application of remote patient monitoring, the protocol considers remote user authentication and subsequently develop secure access to data retained using cloud infrastructure. A cloud service provider is considered that manages users and their requests.

Sakshi Sharma, RashmiVashisth, Zigbee Based Centralized Patient Monitoring System, Centralized patient monitoring systems are in huge demand as they not only reduce the labour work and cost but also the time of the clinical hospitals. Earlier wired communication was used but now Zigbee which is a wireless mesh network is preferred as it reduces the cost. Zigbee is also preferred over Bluetooth and infrared wireless communication because it is energy efficient, has low cost and long distance range (several miles). In this paper we proposed wireless transmission of data between a patient and centralized unit using Zigbee module. The paper is divided into two sections. First is patient monitoring system for multiple patients and second is the centralized patient monitoring system. These two systems are communicating using wireless transmission technology i.e. Zigbee. In the first section we have patient monitoring of multiple patients. Each patient's multiple physiological parameters like ECG, temperature, heartbeat are

Measured at their respective unit, If any physiological parameter value exceeds the threshold value, emergency alarm and LED blinks at each patient unit. This allows a doctor to read various physiological parameters of a patient in real time.

Vahedha, B.Naga Jyothi, Smart Traffic Control System Using ATMEGA328 Micro Controller And Arduino Software, The work aims in designing an intelligent traffic controlling system. Traffic increases in proportion with the population especially in a developing country like India. Hence there is a great requirement to have well coordination of the traffic signals for the smooth control of traffic especially in busy traffic hours. The proposed work is developed so as to reduce traffic jams particularly when emergency vehicles are approaching towards the traffic junction. A Radio Frequency Identification Tag is provided to each vehicle which is highly Intact. As the emergency vehicle approaches the traffic junction, RFID reader studies the signal conditions, a green wave is indicated and hence the vehicle passes smoothly without getting stuck in jam. As the vehicle crosses the traffic signal point automatic change is observed in the signals. Work is implemented keeping in view a multi road traffic junction point. The proposed work includes the following three applications

**V. METHODOLOGY OF THE PROJECT**



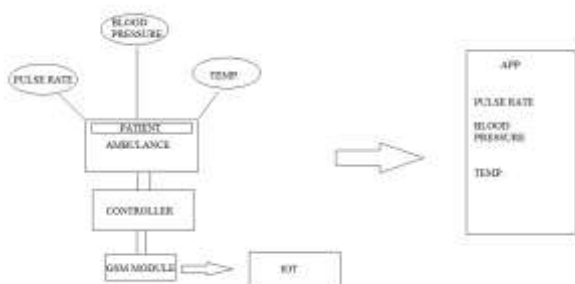
**VI. SOFTWARE USED IN THE PROJECT**

- Proteus software for the circuit simulation
- PCB express or altium software used for the PCB design
- Kill software used to burn the controller.

**VII. EXPERIMENTAL SETUP OF THE PROJECT**



**VIII. Patient monitoring system**



The architecture developed operates under the philosophy of client/server in Fig., it shows the distribution of architecture. Here are the features of the components of the server and client will be described.

- Server: The server consists of three basic components:
- Detector context: is the component responsible for obtaining context information. The information is captured through the answers given by the web services that make communication available between the app and sensor through the microcontroller, the database patients, and types of workouts, illness and doctors.
- Reasoning engine: the patient data transfer system through the microcontroller processing via IOT to be displayed on the app.

## RESULT & CONCLUSION

I have studied the research on this topics, in most of the research have been conducted only on the patient monitoring or the traffic control system, but the only system is I proposed to do the combination of both the system with the single efficient controller.

The proposed system is for the patient monitoring and how to get the fast medical service to the patient in the ambulance and in the traffic system. The wireless communication system used in this project is GSM and RF system to communicate with the display server and traffic system.

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