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ijirset@gmail.com



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Intelligent Ambulance with Smart Traffic Control with Patient Health Monitoring

¹Dr.N. Srikanth, ^{2*}T.Meghana, ³R.Naveen, ⁴M. Gireesh, ⁵S.V.Satyanarayana,

¹Assistant Professor, Department of Electronics and Communication Engineering, St. Peter's Engineering College,
Hyderabad, Telangana, India

^{2,3,4,5}UG Student, Department of Electronics and Communication Engineering, St. Peter's Engineering College,
Hyderabad, Telangana, India

ABSTRACT: Presently a-days considering the temporary world situation, particularly in substantial urban areas, numerous administrations get deferred because of gridlocks. Rescue vehicle administration is one of the critical administrations that get postponed frequently. Likewise, at times Onsite specialists are not accessible. So, the patient does not stand out enough to be noticed right away. This paper depicts a 'Smart rescue vehicle with traffic light' that incorporates insightful traffic controlling just as well-being observing framework to beat the present circumstance. The patient's crucial well-being boundaries, such as ECG, Heart Rate, and Body Temperature, are observed in the well-being checking framework. For ECG estimation, a 2-lead Electrode Electrocardiogram method is utilized. Pulse estimation is finished utilizing the photoplethysmography strategy. LM-35 is utilized to gauge the patient's internal heat level. These boundaries are shipped off a PC in an emergency vehicle using sequential correspondence, and this information will be shipped off the medical clinic worker. An RF transmitter on the rescue vehicle will speak with the RF recipient on the signpost in the traffic light section. A calculation is utilized to control the traffic lights naturally dependent on the key squeezed by the driver from the console in the emergency vehicle.

KEYWORDS – Accident,gsm module, traffic,rf transmission

I. INTRODUCTION

The present world is creating at an exceptionally fast. Regular innovation is found. At a similar time, everybody is dealing with numerous issues in these keen urban communities. A portion of these issues is well-being issues, just as high gridlocks in large urban areas [5]. Traffic clog causes numerous enemy impacts on the nation's transportation. Emergency vehicle administration is the assistance that gets generally influenced in light of these gridlocks. On the off chance that there is a postponement in coming to of rescue vehicle to the clinic, a patient may lose his life. It is an intense issue if there should be an occurrence of coronary failure patients. The primary subject behind this plan is to give a smooth stream to the crisis vehicles like emergency vehicles to come to the medical clinics on schedule [1] and limit the deferral brought about by gridlock. The thought behind this plan is to carry it out, which would precisely control the traffic signals in the way of the emergency vehicle. The emergency vehicle is constrained by the control unit, which outfits good course to the emergency vehicle and redundant controls the traffic signal per the emergency vehicle area and arrives at the clinic securely. This plan is entirely mechanized [4].

II.LITERATURE SURVEY

Title 1:Web-Service Oriented Architecture for Telemedicine Applications

In this paper, a far-off specialist for homecare and clinical conclusions on the cardiovascular patient is proposed. A unique savvy framework has been projected to adjust to the patient and create, this way, a customized finding considering his information and his clinical history, a reasonable and conservative gadget that can adjust to a patient. It is feasible to notice that the ECG signal chart on PDA show the data identifying with determination and the estimation vulnerability [1]. The patient additionally has the chance to print the outcomes by a Bluetooth printer. The inserted data on the framework metrological exhibitions and patient information are utilized to arrange the processing calculation to lessen analysis flaws.



Authors:- ClaudioDe Capua, Antonella Meduri, and Rosario Morello.

Year ofPublication: - 2010

Title 2: An Advanced Intelligent Ambulance with Online Patient Monitoring System

We will follow the patient's ailments with the following boundaries: pulse, internal heat level. These boundaries are shipped off any predefined cell utilizing a GSM unit [2]. Here we utilize a get-together programming for better exactness and GPS and GSM modules that will follow the vehicle anyplace on the globe. As per this task, when the patient's boundaries surpass the ordinary qualities, the sensor will distinguish the sign and send it to a miniature regulator. The miniature regulator will send the alarm message through the GSM to an approved mobile number, which will help in giving better offices to the patient.

Authors: -Ankit Jha, Lalit Kanwar, Mayur Solanki, Shyam Sunder Joshi, Smt. Sarita Chauhan

Year ofPublication: - 2015

Title 3: Implementing Intelligent Traffic Control System for Congestion Control, Ambulance Clearance, and Stolen Vehicle Detection

This proposed paper presents an astute traffic light framework to pass crisis vehicles easily. Every individual vehicle is furnished with a unique radio recurrence distinguishing proof (RFID) tag (set at a vital area), making it difficult to eliminate or annihilate. We use an RFID peruser, NSK EDK-125-TTL, and PIC16F877[5].A framework on-chip to peruse the RFID labels joined to the vehicle. It tallies several vehicles that pass in a specific way during a predefined length. It additionally decides the organization clog and subsequently the green light term for that way. If the RFID tag read has a place with the taken vehicle, a message is sent utilizing GSM SIM300 to the police control room.

Authors: -Rajeshwari Sundar, SanthoshHebbar, VaraprasadGolla

Year ofPublication: - 2015

Title 4: Microcontroller Based Health Care Monitoring System Using Sensor Network

This paper proposes the microcontroller-based constant non-obtrusive sleeve less pulse estimation framework with a caution circuit for medical care checking framework. The light sign is utilized in the sensor network segment of this inserted framework as light does not have any severe impact on a human body when it works in constant mode. Heartbeat rate computation and internal heat level assurance is likewise implanted in this framework utilizing sensor organization; the framework can inform utilizing a disturbing circuit. Microcontroller ATMEGA8L [3] constrains the entire framework. The general framework is dependable, exact, compact, trust commendable, easy to use and user friendly

Authors: -Md. Manirul Islam, Fida Hasan Md. Rafi, Mohiuddin Ahmad, Abu FarzanMitul,T.M.N. Tunku Mansur, M. A. Rashid.

Year ofPublication: - 2012

III. PROPOSED SYSTEM

INTELLIGENT AMBULANCE AND HEALTH MONITORING SYSTEM USING IOT

The accompanying two frameworks are consolidated in this paper. Information obtaining will occur in the Health observing framework, and boundaries will be shipped off the emergency clinic worker through PC. The rescue vehicle driver will controlthe traffic light from a keypad present in the rescue vehicle.Both well-being checking and traffic controlling frameworks will work at the same time. A specialist in a medical clinic checkspatients well-being boundary, and the driver of the emergency vehicle can control the traffic lights.

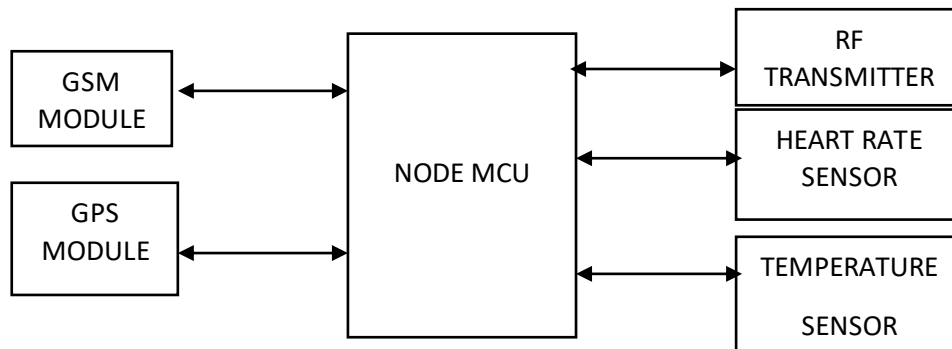


Figure 1:Block diagram of the health monitoring system

NODE MCU: The NodeMCU ESP8266 advancement board accompanies the ESP-12E module containing the ESP8266 chip having Tensilica Xtensa 32-cycle LX106 RISC microchip. This chip upholds RTOS and works at 80MHz to 160 MHz movable clock recurrence. NodeMCU has 128 KB RAM and 4MB of Flash memory to store information and projects. Its high preparing power with in-fabricated Wi-Fi/Bluetooth and Deep Sleep Operating highlights make it ideal for IoT projects. NodeMCU can be fueled utilizing a Micro USB jack and VIN pin (External Supply Pin). It upholds UART, SPI, and I2C interface.

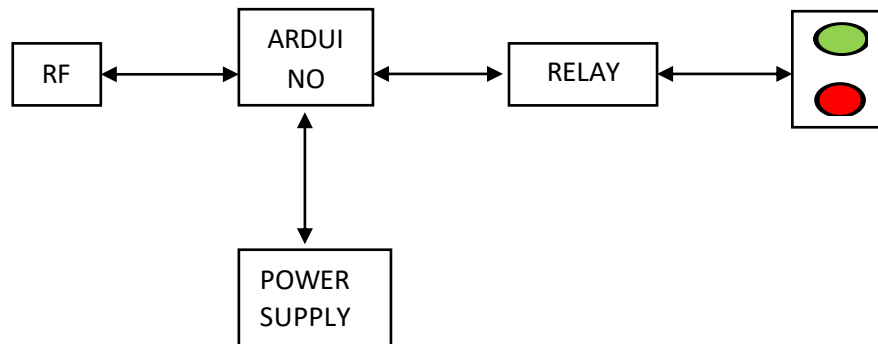
GSM MODULE: A GSM modem is a gadget that can be either a cell phone or a modem gadget, which can cause a PC or some other processor to convey over an organization. The GSM modem uses a SIM card to be worked and works over an organization range bought in by the organization administrator. It tends to be associated with a PC through sequential, USB or Bluetooth association.

GPS MODULE: The NEO-6MV2 is a GPS (Global Positioning System) module and is utilized for route. The module essentially checks its area on earth and gives yield information which is the longitude and scope of its position. It is from a group of independent GPS beneficiaries highlighting the superior u - Blox six situating motor. These adaptable and savvy collectors offer various availability alternatives in a smaller than usual (16 x 12.2 x 2.4 mm) bundle. The minimal engineering, force and memory choices make NEO-6 modules ideal for battery worked cell phones with exceptionally exacting expense and space imperatives. Its Innovative plan gives NEO-6MV2 magnificent route execution even in the most challenging conditions.

RF MODULES: HC-12 remote sequential port correspondence module is another age multichannel implanted remote information transmission module. Its small working recurrence band is 433.4-473.0MHz, numerous channels can be set, with the venturing of 400 kHz, and there are 100 channels. The tremendous sending force of the module is 100mW (20dBm), the getting affectability is - 117dBm at a baud pace of 5,000bps noticeable all around, and the correspondence distance is 1,000m in open space.

HEART RATE SENSOR: Checking pulse is vital for competitors, patients as it decides the state of the heart (just pulse). There are numerous approaches to quantify pulse, and the most exact one is utilizing an Electrocardiography, But the more straightforward approach to screen the pulse is to utilize a Heartbeat Sensor. It comes in various shapes and estimates and permits a moment approach to gauge the heartbeat. Heartbeat Sensors are accessible in Wrist Watches (Smart Watches), Smart Phones, chest ties. The heartbeat is estimated in pulsates each moment or bpm, demonstrating the occasions the heart is contracting or growing in a moment.

TEMPERATURE SENSOR: LM35 is an exact n IC temperature sensor with its yield relative to the temperature (in C). The sensor hardware is fixed, and in this manner, it is not exposed to oxidation and different cycles.

**Figure 2:**Block diagram of traffic control system

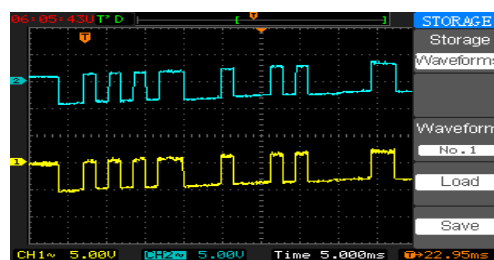
ARDUINO UNO: Arduino truly makes it stand out from the rest of the microcontrollers on the market. An Arduino microcontroller board can be considered as an easy to use, open-source input-output framework. Info can go from anything from a finger squeezing a catch to an adjustment of soft power, and yields can go from illuminating a straightforward LED light to conveying a Twitter message.

This paper portrays checking of well-being boundaries of the patient in rescue vehicle and moving these to the medical clinic, and simultaneously traffic signals are constrained by the driver of an emergency vehicle to arrive at the medical clinic as right on time as could be expected. Well-being boundaries, for example, ECG, Heart rate, internal heat levels, are determined by equipment and further utilizing sequential correspondence is put away in PC present in rescue vehicle through which they are moved to the medical clinic. For the reason of traffic controlling, RF correspondence utilized. Traffic thickness additionally thought of planning the calculation to control the traffic signals. Inserting the well-being Monitoring framework and traffic controlling framework may prompt save one valuable life.

IV. EXPERIMENT AND RESULT

The entire framework is produced to give the medical aid office to the patient if there should be a crisis at the beginning phase.

PROPOSED ACCIDENT SYSTEM: The entire framework is created for giving the medical aid office to the patient in the event of crisis and beginning phase. Here once any mishap takes place, the gear worked in the actual framework distinguish the mishap with the assistance of various sensors like Ir sensor, vibration

**Figure 3:**RF Communication Waveforms

PROPOSED AUTOMATIC CONTROL SYSTEM: While in transit to the mishap spot, the emergency clinic rescue vehicle could trap gridlock. Since we live in a vast populace and vigorously swarmed streets, defeating these gridlocks or taking the patient to an emergency clinic early, this framework helps greatly. Here the rescue vehicle itself advises the close-by traffic signal about the approaching of an emergency vehicle with the assistance of Ir drove and rescue vehicle bell. Traffic signals with the Tshop sensor and the sound sensor change over its light example so that the emergency vehicle can get the free method to arrive at the medical clinic.

HEALTH MONITORING SYSTEM:Now, next to no work has been done to efficiently recognize which biomedical signals (and sign characteristics) all things considered are essential for explicit telemedicine systems in EMS. More exploration coordinated to the part of sign postponement would radically improve the help a telemedicine framework can offer to a doctor who needs to choose for a therapy strategy that intensely depends on the accessibility of biomedical signals inside a specific most significant deferral

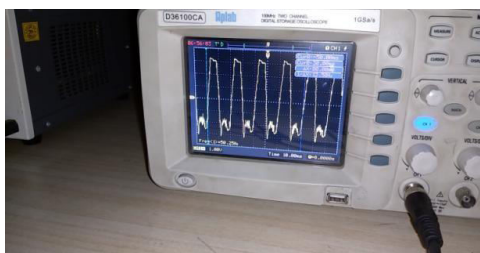


Figure 4: ECG Measurement



Figure 5: HeartRate Measurement



Figure 6: Temperature Measurement

IV. CONCLUSION

In this proposed paper, a framework is depicted to screen the patient's well-being boundaries ceaselessly, at the same time, will control the traffic light. Rescue vehicle administration is one of the pivotal administrations that get deferred all the time. This paper depicts two frameworks, viz. patient well-being observing framework and clever traffic light framework. The patient's imperative well-being boundaries, such as heart rate, body temperature, and ECG, are observed in the well-being checking framework. This data is shipped off the medical clinic for examination. In the traffic light part, the RF transmitter on the rescue vehicle will speak with the RF collector placed on the signal point. A calculation is intended to control the traffic lights, consequently dependent on the key squeezed by the driver from the console in the emergency vehicle. The traffic signal calculation thinks about the current and objective area of the emergency vehicle to control the traffic signals. It will help advance the time taken by the rescue vehicle to arrive at the medical clinic. Likewise, observing the patient will assist the specialists with giving him the acute treatment for the time being. Nowadays, this framework can be improved by adding a simple GPS route framework alongside a clog recognizing module for an advanced traffic light calculation.



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