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Robotic Automated External Defibrillator

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Abstract: ***India is one of the most populous countries of the world. Due to over population, ignorance of health has been remained the major problems in India. For every one minute a death, oops in because of heart attack. Ambulance service plays an important role in saving lives. Its primary purpose is to give first aid to the sick or injured people in the emergency scene. To save a life is auspicious as well as precious.***
The idea here is to provide an intelligent smart health system using some sensors and microcontrollers; it will sense the body condition and send the data to the collaborated hospital's database. This proposed idea gives us the development of a wireless-based system for pulse rate, blood pressure and temperature monitoring to be used in ambulance.
By this, the real time information can be passed to nearby hospitals to alert them about the critical conditions over IOT. This hardware device is fixed inside the ambulance to sense the patient's health, collect the info during a wireless device called node MCU and immediately pass the database to the hospital's server by the concept of IOT. This may intimate the hospital officials and should answer the required actions to be taken to the person in emergency.

I. INTRODUCTION

The traffic condition in India effect emergency services like Ambulance and fire truck. Time is a crucial think about case of emergencies; hence we are proposing a system which makes the patient gets right time treatment in ambulance. According to research conducted by global consultancy firm, traffic in peak hours in major four cities - Delhi, Bengaluru, Chennai, Kolkata costs the economy Rs 1.47 lakh crore once a year .
Kolkata is worst among them followed by Bengaluru. In Bengaluru case, rail-based projects like Namma Metro while effective, the capacity be sufficient to bring down congestion levels by the time they're fully operational.
The main reason behind this is often increasing population which results in increased number of vehicles, thanks to which emergency service like Ambulance get affected. Because of this delay in ambulance service, patient may lose his life and number of those scenarios are increasing day by day.
When emergency vehicles are stuck in heavy traffic and cars are unable to tug over. therein time, the patients get into dangerous stage. In ambulance the care taker haven't any idea treat the patient in sever stage it makes patient die or dangerous stage. This paper proposes an answer to form such services easily available to those in need.

A. Scope Of The Project

1) If the condition is critical the information about the patient will be sent to the hospital monitoring database.
2) It helps the doctors to prepare medical instruments in hospital if any emergency.
3) To save a life is auspicious as well as precious.
4) The idea here is to supply an intelligent smart health system using some sensors and microcontrollers; it'll sense the body condition and send the info to the collaborated hospital's database.
5) Patient will get correct treatment at a time.

B. Hardware Requirements

1) Microcontroller
2) Wireless transmitter-node mcu
3) Wireless receiver
4) Heart rate sensor
5) Pulse rate sensor
6) Temperature sensor

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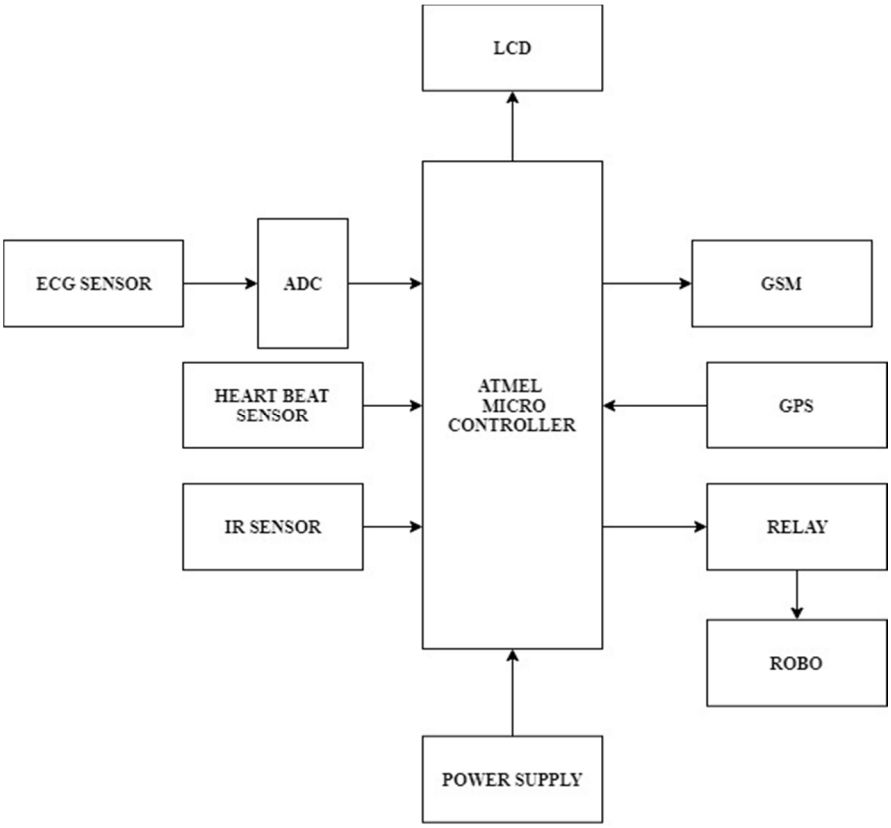
C. System Architecture



D. Software Requirements

1) Arduino ide
2) My sql
3) Embedded c
4) Php
5) java

II. SYSTEM MODULES

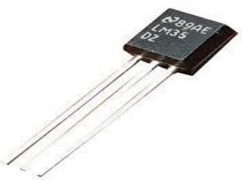
A. Patient's Data Collection

Sensor may be a device to live temperature, pulse, heart beat readings through electrical signals. Temperature is that the commonest physical measurement type in industrial applications. Pulse sensors use the photoelectric method.

The pulse sensor measures your pulse in Beats per Minute using an optical LED light and an LED light sensor. The sensor will get the knowledge of patient's temperature, pulse, heartbeat and transmit it into microcontroller.

1) Temperature Sensor

a) The LM35 series sensors are precision with integrated-circuit temperature devices which has an result with an output voltage linearly- proportional to the Centigrade temperature.



b) The LM35 device is rated to operate over a −55°C to 150°C temperature range, while the LM35C device is rated for a −40°C to 110°C range (−10° with improved accuracy).

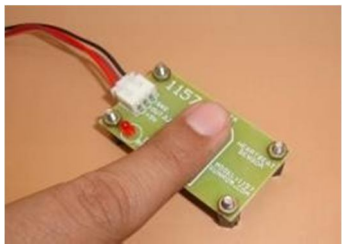
2) Pulse Sensor

a) Pulse Sensor is a well-designed plug-and-play heart-rate sensor for Arduino.

b) The sensor clips onto a fingertip or earlobe and plugs right into Arduino withsome jumper cables. It also includes an open-source monitoring app that graphs your pulse in realtime.

3) Heart Beat Sensor

a) Heartbeat Sensor is an electronic device that is used to measure the heart rate i.e. speed of the heartbeat.



b) We can find the Principle of Heartbeat Sensor, working of the Heartbeat Sensor and Arduino based Heart Rate Monitoring System using a practical heartbeat Sensor.

Transmit Data from Arduino to IOT board by use of UART protocol.

- Microcontroller will transmit data from Arduino to IOT board by using UART protocol.
- It provides transmit data and a receive data then send it to the server.
- And it will be stored in server and display that information to the doctor.

4) Arduino

a) Arduino is an open-source microcontroller board based on the ATmega328 which is used to upload(burn) a program to the microcontroller using a USB cable.

b) It also has a 14 input and output pins and regulated power of 5V.

c) Reset button which is present on the board can be used to reset the Arduino microcontroller.

5) IOT Board

a) IoT has evolved from the convergence of wireless technologies, microelectromechanical systems (MEMS) and the Internet.

b) The concept may also be referred to as the Internet of Everything.

c) IoT board is featured with SIM900 GPRS modem to activate internet connection and also equipped with a controller to process all input UART data to GPRS based online data.

d) Data may be updated to a specific site or a social network by which the user can able to access the data over the internet.

Transmit data from IOT board to server by use of MQQT protocol

- IOT board will transmit the info to server by use of MQQT protocol.
- IoT prototyping kits and development boards combine microcontrollers and processors.
- MQ Telemetry Transport is a particularly simple and light-weight messaging protocol (subscribe and publish) designed for limited devices and networks with high latency, low bandwidth or unreliable networks. By using the info received from controller the doctor can suggest the treatment to the patient.
- As it reduces the human effort then it definitely saves out time.

III. SOFTWARE TESTING STRATEGIES

A. A software testing strategy provides a road map for the software developer.

B. Testing may be a set activity which will be planned beforehand and conducted systematically.

C. For this reason, a template for software testing a group of steps into which we will place specific test suit design methods should be strategy should have the subsequent characteristics:

D. Testing begins at the module level and works “outward” toward the mixing of the whole computer-based system.

E. Different testing techniques are appropriate at different points in time.

IV. CONCLUSION

A. In this paper, we propose an IOT-based system for patients with the danger of attack and uneven blood heat or the other sever condition in ambulance.

B. If the condition is critical the knowledge about the patient are going to be sent to the hospital database.

C. This paper proposes a system to update patient data to hospital servers for analyzing.

D. The doctor can view patient details, before the patient entering in to the hospital.

E. We approach a system which is employed to attach the ambulance and hospitals.

V. FUTURE ENHANCEMENTS

A. Our future work will be integrated with Aadhar card and patients details.

B. It will help to doctors to analyze the doctor for past history of the patients.

C. The processes will include the creating a data base for every patients.

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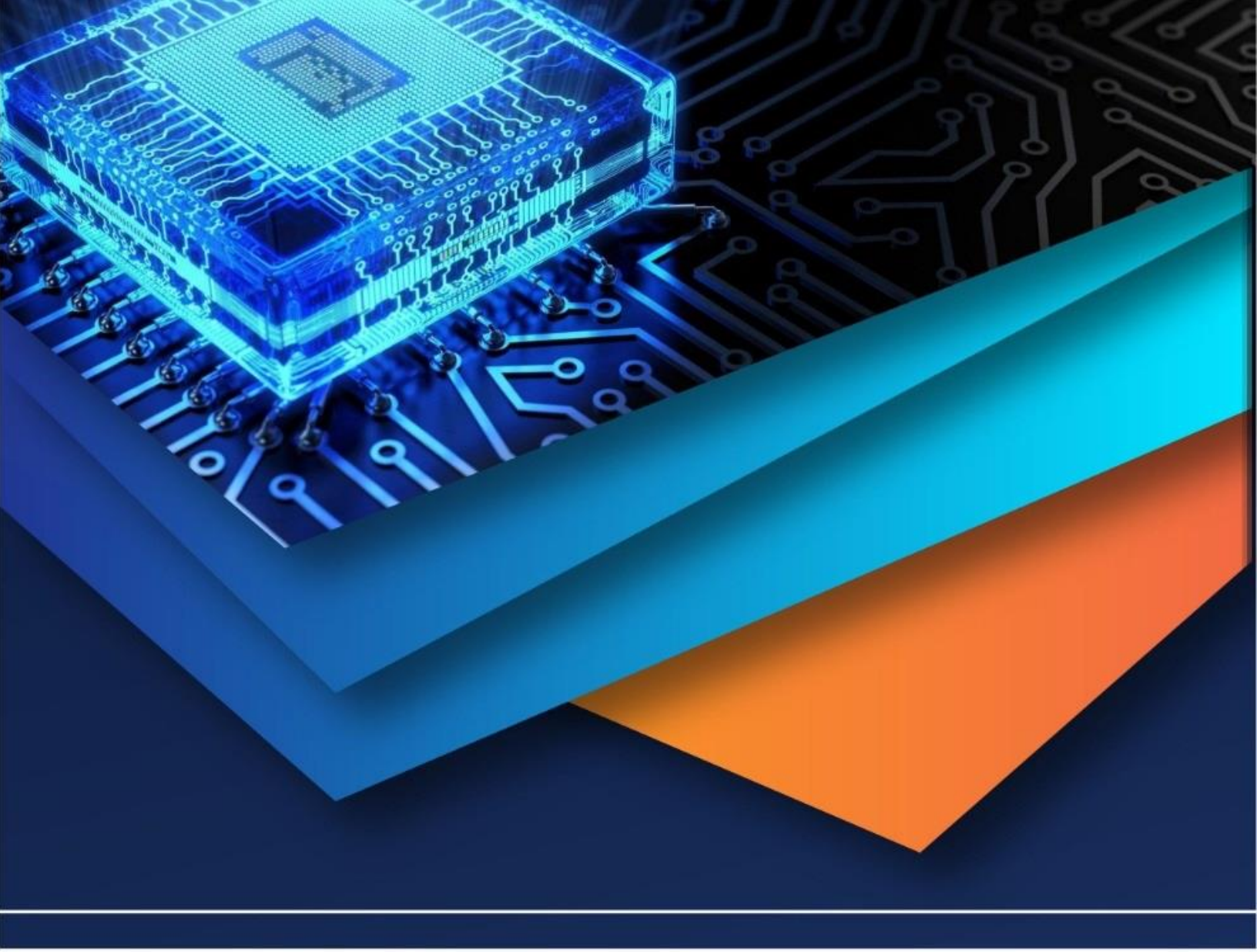

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