Emergency Vehicle Pre-Emption and Patient Monitoring

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Abstract – **The growth of industrialization and urbanization has lead to an immense increase in the population invariably leading to rise in the number of vehicles on road. The resulting traffic congestion and traffic jams are the major hurdles for emergency vehicles. To solve this problem to some extent we have apparently come up with "Intelligent Traffic Control System (ITCS) for ambulance". The proposed system clears the traffic congestion by turning all the red lights to green on the path of the ambulance, hence helping in clearing the traffic and providing way towards its destination. The primary function of this system is to monitor the 4 health parameters of a patient. Temperature, Pressure, Saline level and Heart Beat of the Patient is monitored and the data collected by these sensors are sent to the Arduino and the readings are also displayed on LCD. These parameters can be monitored by the doctors and patient's relatives via a mobile application.**

Keywords: Congestion, Destination, Arduino,ITCS,TMS

1. INTRODUCTION

Now a day's as population increases, on the High way and roads, the number of vehicles increases. Due to this results heavy accidents occurred. The required information about the subject is intimated to the hospital. To avoid traffic jam, accidents instantaneously the project is designed in an easy way. The subject must be secured and protection in vehicle and focus on eco-friendly safety. Collecting the required data from sensors which is attached to Arduino UNO 3 and the subject is monitored each moment. The design of project bring useful for avoiding traffic congestion by using Wifi module. The data is communicated over one device to another device with 2 wires using SDA(Serial data) and SCL(Serial clock) lines which perform the required task. The speed of data accessing is 100kbps to 3.4bps. Intelligent Traffic Control Systems has emerged as a solution that is an advantage from the unique features and capabilities of Internet of Things (IOT).

II. LITERATURE SURVEY

`Green Corridor' is the concept by which patient will get needed treatment on time. In smart ambulance different sensors will be judging status of vital parameters, then the data's will be sent to the hospital simultaneously traffic signals will be operated by using wifi message through cloud The communication between smart ambulances will be done by wifi through cloud. This system ensures quick response for emergency situations by automatically controlling traffic signals on the path of the ambulances. Traffic Management System (TMS) is capable of implementing changes to the road network's control and driving policies following an appropriate and well-tuned adaptation strategy.

III.PROPOSED SYSTEM

The project is designed to find the location of moving ambulance and signal posts is updated periodically into cloud with the help of the Wifi module. The data is analysed in the cloud and sent to the nearest ambulance to turn on the green light. So the signal posts constantly receives the data and when it is asked to turn on the green light it just does irrespective of the traffic status.
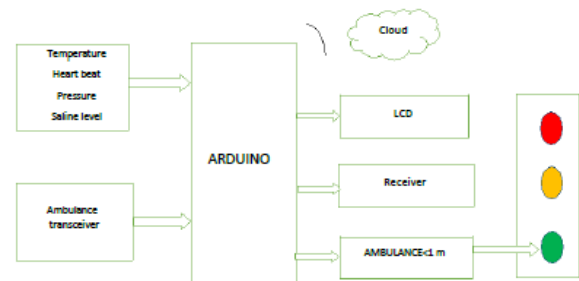

Figure.1. The above shown is the block diagram

The primary function of this system is to monitor the 4 health parameters such as temperature, Humidity ,Saline level and Heart Beat of the subject and the data collected by these sensors are sent to the Arduino. The Arduino then transmits the data to the user in the form of SMS. Here Wifi module is used in order to transmit the information. From the transmitter, the recordings of patient health parameters are sent as an SMS to the care

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taker or the expert or a doctor which have been given as the recipient. Not only the information is sent ,the readings are displayed on LCD. The other part is When the ambulance is travelling and the traffic density is high in the signal the sensor can sense the traffic density at the distance of 1m.Then it turns the signal to green and the road gets cleared the ambulance moves freely. When the distance is greater than 1m the signal is in red.

V. PROJECT DESCRIPTION

A.HARDWARE

The microcontroller used here is the ATMEGA328P.Input given here is analog input. The digital output is taken out €from the pins 4 to 11.
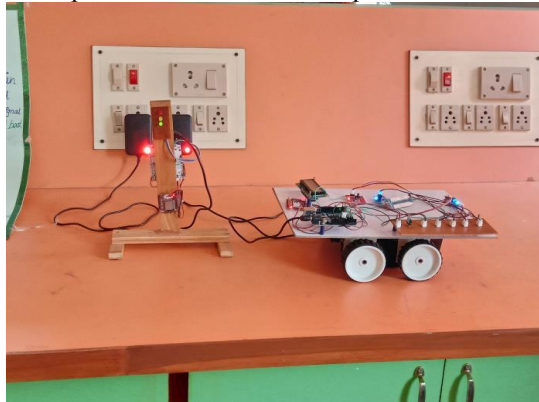

Figure.2. Hardware kit

The figure 2 is the hardware kit. It consists of a microcontroller, wifi module, voltage regulator, temperature sensor, pressure sensor, heartbeat sensor, salinity level sensor and an LCD display.

Micro controller : ATMEGA328P

Wifi module : ESP8266

Voltage regulator : KA7805

Temperature sensor : LM35

Pressure sensor :PC board mountable

Heartbeat sensor :Finger type

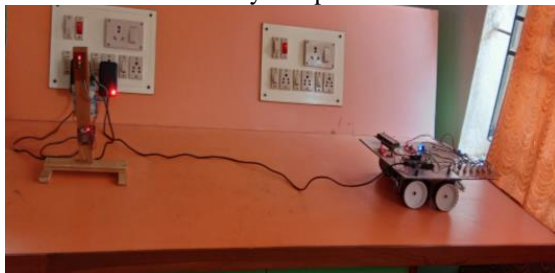Salinity level sensor : YL-69

Power source : 12V battery/Adapter

Figure.3. Traffic Light Indication

The figure1.3 is the Traffic Light Indication which changes the colour of the traffic signal to red as the emergency vehicle moves far away from the signal post.

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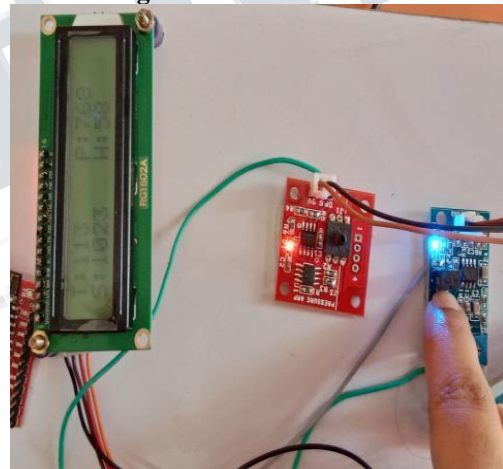

Figure: 4 Arduino UNO 3

Figure: 5 LCD Module Output

The above Figure: 5 shows the parameter readings of Temperature, Pressure,Heartbeat and salinity level of a normal subject.The normal level of a human for the following parameters are shown in the below table.

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PARAMETERS	NORMAL RANGE
Temperature	98.6°F (37°C)
Pressure	120/80mmHg to 139/89mmHg
Heartbeat	60 to 100 beats per minute
Salinity level	0.4 % of the body's weight

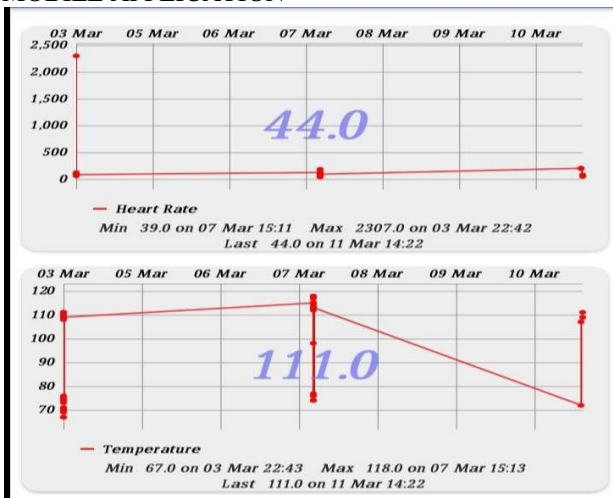B.TEMPERATURE ,PRESSURE ,SALINITY LEVEL ,HEART BEAT CHARACTERSTICS DISPLAY IN MOBILE APPLICATION
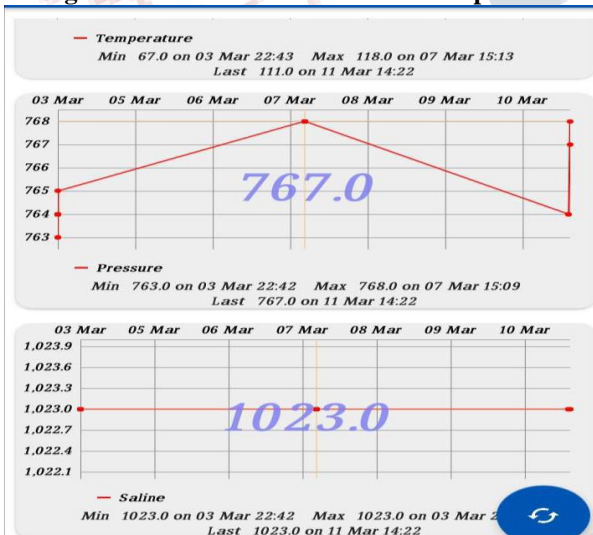

Figure:6 Result of Heartrate and Temperature

Figure:7 Result of Pressure and Salinelevel

C.SOFTWARE DESCRIPTION
The software tools which are used for the implementation are listed below, they are
ARUDINO
The arduino version used here is 1.8.5. The open-source Arduino Software (IDE) makes it easy to write code and upload it to the board. It runs on Windows, Mac OS X, and Linux. The environment is written in Java and based on

VII.CONCLUSION

This emergency vehicle pre-emption helps to save a human life. In such an situation Intelligent Transportation Systems (ITSs) has emerged as a solution that is an advantage from the unique features and capabilities of Wireless Sensor Networks (WSNs) and Internet of Things (IOT). The architecture will increase the efficiency of ambulance reaching the destination on time using the concepts of WSN and IOT.

In Parallel Emergency Treatment has been given to the patient by observing their body parameter and the information has been conveyed to the Doctor before reaching the hospital.

VIII.REFERENCES

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