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The Heart Attack Detection System and Reporting over Web Server using Arduino Mega & Node MCU

Deepika[1], Dr. Shubhangi D C[2]
[1]*PG Student, Dept. Of VLSI Design & Embedded Systems VTU Centre for PG studies,Kalaburagi, Karnataka, India*
[2]*Professor VTU Centre for PG Studies Kalaburagi, Karnataka, India*

Abstract*: *The proposed system in this paper provides heart attack detection system and reporting over web server using Arduino Mega 2560 microcontroller and ESP8266 Node MCU Wi-Fi module. The proposed system utilizes multiple sensors that sense the physical parameters and pass on to the microcontroller. The physical parameters are converted to electrical signals with the help of controller and then relay triggers the pump depending upon the condition. The Node MCU ESP8266 Wi-Fi module sends data over the cloud.

Key words: Herat Attack, Arduino Mega 2560, Node MCU, Cloud

I. INTRODUCTION



Fig.1 Human Heart

The leading world suffers from various life taking diseases such as paralysis, sugar, cancer and heart disorders. The deaths due to this are increasing day by day. The proposed system is developed with the objective of providing interactive steering system for heart attack or other heart related patients. The present study says that the patients hesitate to consult doctor when encounter the heart related issues however it is very important for every patient to reach quickly to the hospital after encountering heart related issues to save their lives. The main aim of this proposed system is to develop a user friendly wheel of steering that effectively identifies the symptoms of encountering heart stroke/ Attacks in an individual who has history of chronic heart disease while driving. The proposed system utilizes multiple electronic sensors that senses continuously drivers heart rate, driver's body temperature and resistant of skin with the help of heart rate sensors, temperature sensor and skin sensor respectively. Ones the sensor exceeds the threshold values the following cautions will be taken

1) Send the current location of the driver to the paramedics with SMS using GSM
2) Warn other drivers that there is a medical emergency situation on board

All the actions are carried out effectively and the information is also uploaded to the web-server with the help of Node MCU ESP 8266 Wi-Fi module.

II. LITERATURE SURVEY

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In [1] this paper provides "A self test to detect a heart attack using mobile phone and variable sensors". The proposed system in this paper comprises of small wearable ECG sensor and mobile phone circuitry. The ECG sensors effectively monitors the heart beats of the individual and if the threshold value of the ECG sensor exceeds the message of alert with the help of GSM module is sent to the registered mobile number of nearest hospital to take necessary actions.

In [2] This paper provides "Design of non- invasive set up for car driver biomonitoring". The proposed system in this paper consists of new thin film multipurpose microprocessor (IDAT) combined with temperature sensor on single chip. The proposed system continuously monitors the symptoms of heart attack in an individual having chronic heart related diseases over years and the results are uploaded over web server with the help of Node MCU ESP8266 Wi-Fi module.

In [3] This paper provides Cardio Wheel ECG biometric on the steering wheel. The proposed system consists of ARM7 processor which is the heart of the project. The proposed system consist of multiple electrical sensor such as pulse rate sensor LM35 temperature sensor that senses the physical parameters of an individual and convert it into electrical signal with the help of ARM 7 processor.

III. PROPOSED DESIGN METHODOLOGY

A. Block Diagram

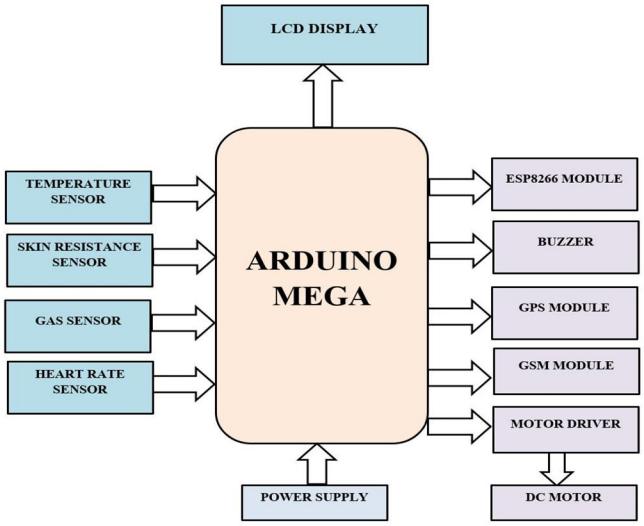


Fig. 2 Block diagram of proposed system

IV. HARDWARE IMPLEMENTATION

A. The Followings Part List The Hardware Utilized In The Proposed System

1) *Arduino Mega 2560 Microcontroller:* The microcontroller that consist of AT mega 2560 processor chip that totally consist of 54 digital input output pins
2) *Temperature/ Humidity Sensor (DHT11):* The LM 35 is a DHT11 sensor whose output voltage is linearly proportional to Celsius.
3) *Heart Rate Sensor:* The electronic sensor that sense heart beat is called as heart rate sensor.
4) *DC Motor:* The DC motor is the electronic components that convert electrical energy to mechanical energy
5) *GSM Module:* The proposed system utilizes GSM SIM 800 module for sending message.
6) *GPS Module:* Globule Positioning system Neo 6M that tracks and locate current location
7) *Soil Moisture Sensor:* This sensor is used for sensing moisture content of body.
8) *ESP8266:* The ESP8266 module provides open source IOT platform and supports onboard Wi-Fi feature.
9) *Buzzer:* Electronic device to convert electrical energy to sound energy.
10) *Motor Driver:* L293D is motor driver IC to drive motor in both clockwise.
11) *16X2 LCD Display:* Small screen of various applications.

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B. The Followings Are The List Of Software Utilized For Designing Proposed System

1) Arduino IDE: the Arduino IDE compiler software is utilized for writing and uploading code to the board.

2) Proteus 8 Professional: This software is utilized for designing of the proposed system.

V. EXPERIMENTAL SETUP AND RESULT

The following figure provides the experimental setup of the system which is proposed in this paper. The proposed system utilizes two RFID card i.e. one is valid card and another one is Invalid card. The toll gate will be open when valid card is swiped & it will remains in closed state upon swiping invalid card. The proposed system utilizes multiple electronic sensors that senses continuously drivers heart rate, driver's body temperature and resistant of skin with the help of heart rate sensors, temperature sensor and skin sensor respectively. Ones the sensor exceeds the threshold, the system send the current location of the driver to the paramedics with SMS using GSM and warn other drivers that there is a medical emergency situation on board

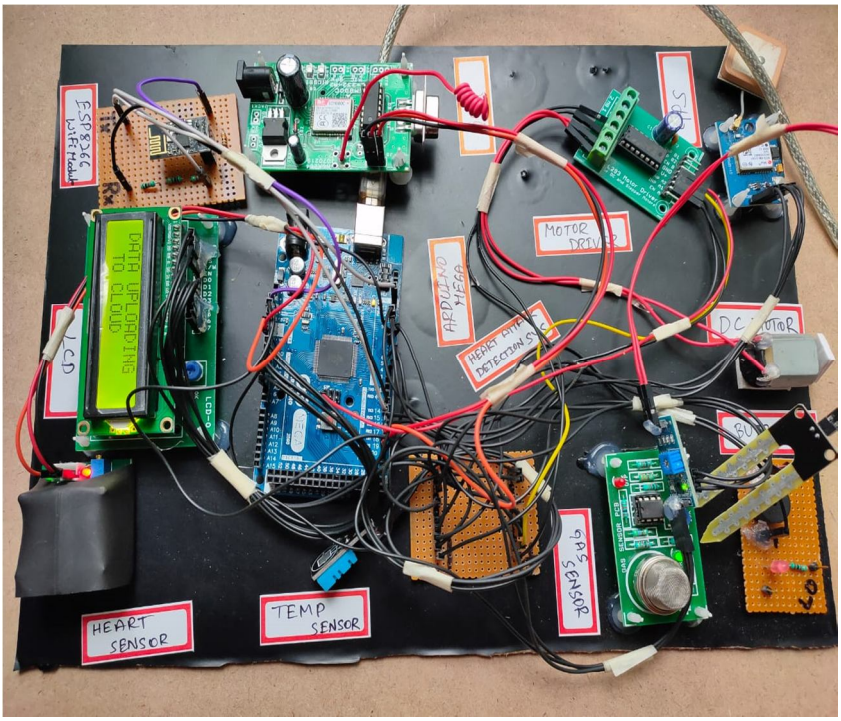


Fig. 3 Experimental setup of Proposed System

The following figures represent the LCD displaying all processing results



Fig 4 LCD display 1



Fig.5 LCD display 2





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Fig. 6 LCD display 3

Fig.7 LCD display 4





Fig. 8 LCD display 5

Fig.9 LCD display 6





Fig. 10 LCD display 7

Fig.11 LCD display 8

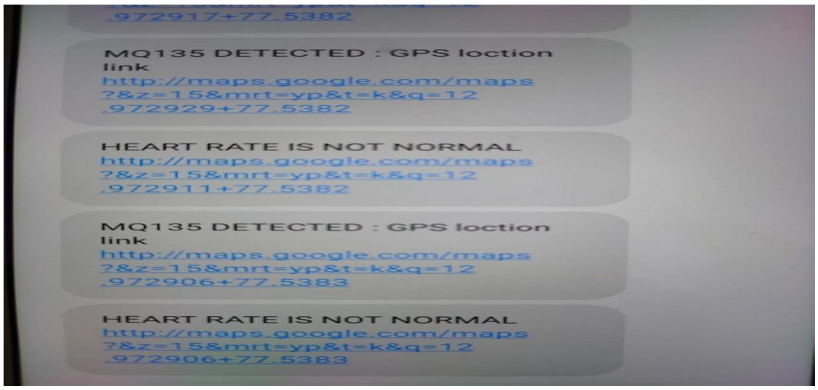


Fig.12 SMS



Fig.13 Web server result

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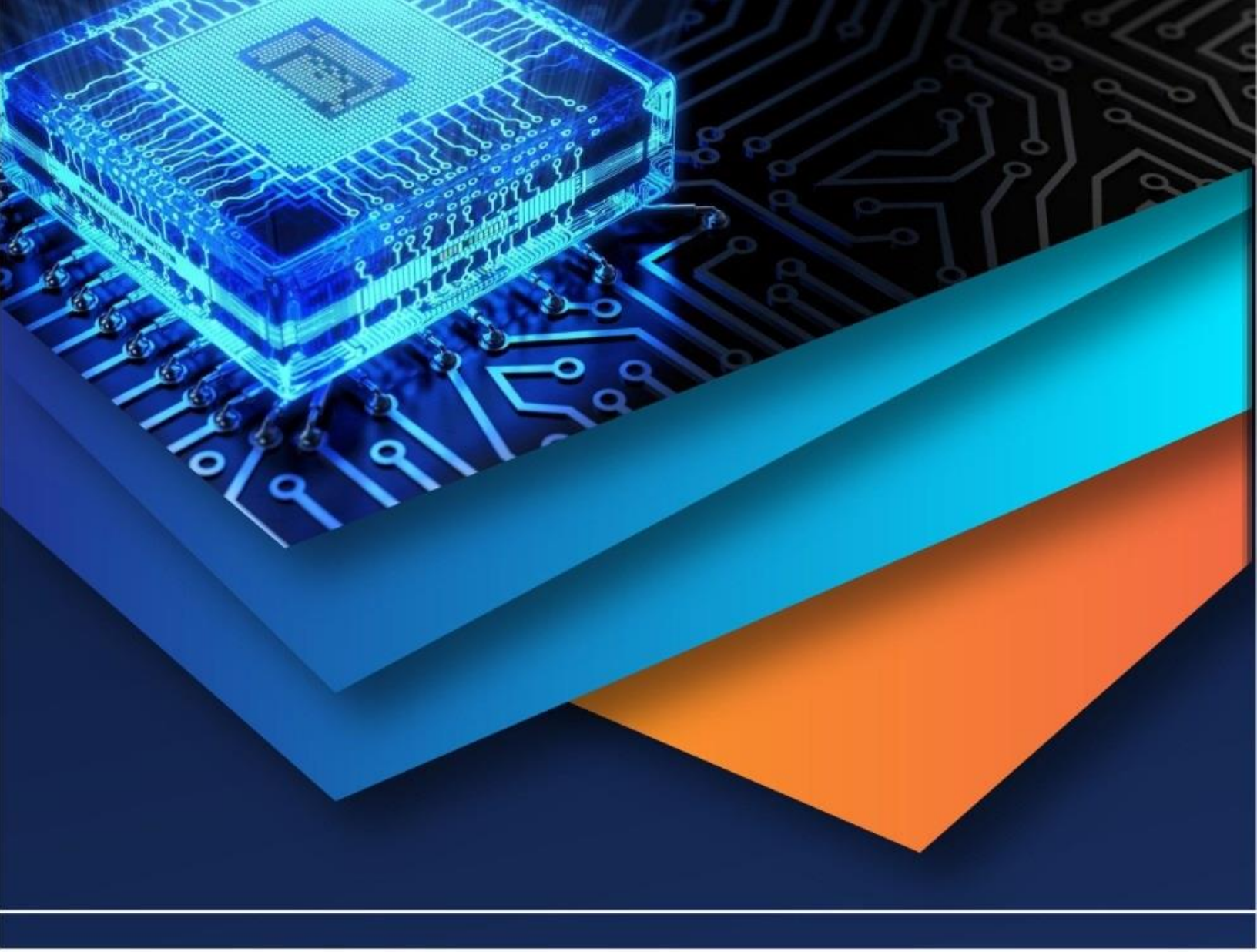
VI. CONCLUSION

The proposed system is effectively designed and the results are executed on real time driver's suffering from the heart related diseases by utilizing multiple sensor and advanced processors to avoid life taking incident without compromising its cost.

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