

Robotic Ambulance for Medical Emergency Using Microcontroller and Sensor

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Abstract - Time is an essential issue when relating to individuals who go over a prompt variance in the well being. That may even happen sudden passing of a man, if legitimate emergency treatment isn't given until the arrangement of reasonable medicine through the specialist's remedy. Accordingly giving of prompt treatment i.e., emergency treatment is must to the casualty in the wake of falling. Step by step innovation is developing radically, among which mechanical autonomy is additionally one of such stream. Consequently in this paper we are proposing a help for the casualties, by giving expected means to protect from the sudden vacillation in the well being. Thus with the assistance of a mechanized framework a quick protect help is given.

Key Words: Robot, Pulse sensor, Pulse sensor, Microcontroller, First aid kit.

1. INTRODUCTION

Mechanical systems are one of the key responses for giving splendid organizations. AMBUBOT is favored for a brisk treatment using Automated External Services to control the loss inside two or three minutes, by empowering diverse techniques for undertaking from manual to independent attempting to save some person's life in the required area. The models with biomedical sensors are used for checking the patient prosperity. The territory of the patient is being taken after if there ought to emerge an event of emergency by methods for GSM. The splendid world is required to incorporate sudden change identification, preparing, and correspondence to achieve finish interconnections of physical acknowledgment, computerized coordinated effort, social association, and mental thinking. Extending people thickness in urban circumstances demands attractive course of action of organizations and system. This impact in city masses will indicate genuine challenges including air defilement, action stop up, prosperity concerns, imperativeness and waste organization. As a creating stage for that zone, a versatile robot can be used remembering the ultimate objective to energize the restorative administrations. Most rescuers happen not long after the event of a failure happens. In that event, human rescuers will deal with the spare needing to get out to the domains, find the losses, and then again, a convenient robot would have the ability to development all through the earth and can put their position wherever its condition is required. Compact robot is a self-representing or semiautonomous machine that is capable to move around in their condition and moreover can perform diverse endeavors either with quick

or midway control by human supervision or absolutely free. With using different sensors for course, this robot can investigate from a point to a given objective without losing the correct way.

2. LITERATURE SURVEY

1] Hooman Samani and Rongbo Zhu proposed a model that assists in finding the persons sudden cardiac arrest using the using the smart health care kit

2] Mr. M. Gajendiran, suggested a model that helps in taking care of a person's health through the simulation method using zigbee protocol with aurdino microcontroller connected with bp kit.

3] Hemavathi.R1, Karthigayini.V2, Kushma.N3, Megala.P4, Nithyapriya A.P5,, suggested a method that helps in maintaining the health of person using the sensors and Pic Controller, and also presented a literature review on Gps/Gsm, LCD.

3. PROPOSED METHODOLOGY

The proposed crisis vehicle robot for urban groups outfits the organization of safeguard vehicle with help, to help some individual having a medical problem. An emergency message and current position of loss will be made. Also, the message can be sent to the specialists for the prescription help. It can be worked in auto or manual mode. This zone of our assignment (figure 1) has the Micro-controller part annexed with the Motor hand-off and with the wheels of the mechanized vehicle. The temperature and heartbeat sensors close by the DC Battery is also found in this section

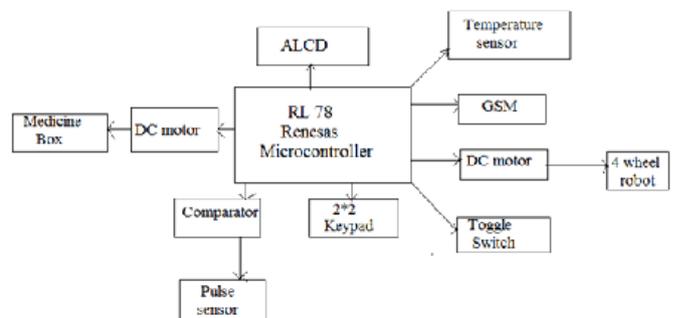


Figure -1: Block diagram

3.1. RENESAS MICROCONTROLLER

The RL78 Family 16-bit microcontrollers are the joining of the high CPU execution and the radiant on-chip components of the R8C and the 78K, and offer a total lineup of 10-128 stick and 1-512 KB things for the 8/16-bit exhibit. Recognizing industry-driving low power use at 46 $\mu\text{A}/\text{MHz}$ usage in the midst of ordinary undertaking and 0.57 $\mu\text{A}/\text{MHz}$ in the midst of clock movement, you can expect inconceivably improved power capability using RL78 microcontrollers. Worked in features, for instance, a high-precision ($\pm 1\%$) quick on-chip oscillator, establishment assignment data streak fit for 1 million changes, temperature sensor, and interface ports for various power supplies help lessen system costs and size.

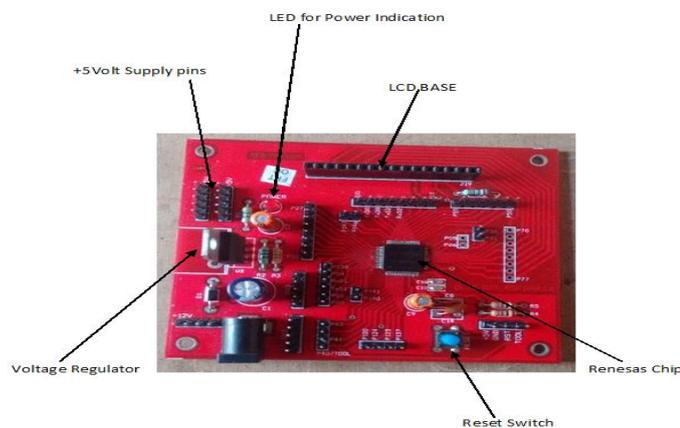


Fig -2: 64 pin renesas microcontroller board

3.2. GSM

GSM/GPRS module is used to develop correspondence between a PC and a GSM-GPRS system. Overall System for Mobile correspondence (GSM) is a plan used for adaptable correspondence in most by far of the countries. Overall Packet Radio Service (GPRS) is an increase of GSM that engages higher data transmission rate. GSM/GPRS module contains a GSM/GPRS modem together with control supply circuit and correspondence interfaces (like RS-232, USB, et cetera) for PC. The MODEM is the soul of such modules. GSM/GPRS MODEM is a class of remote MODEM devices that are planned for correspondence of a PC with the GSM and GPRS orchestrate. It requires a SIM (Subscriber Identity Module) card just like PDAs to incite correspondence with the framework. Furthermore they have IMEI (International Mobile Equipment Identity) number like phones for their recognizing verification.



Figure 3- GSM

3.3. PULSE SENSOR

Pulse Sensor is a particularly delineated fitting and-play heart-rate sensor for Arduino. It can be used by understudies, pros, contenders, makers, and preoccupation and convenient architects who need to adequately combine live heartrate data into their exercises. The sensor cuts onto a fingertip or ear ligament and fittings straightforwardly into Arduino. It in addition consolidates an open-source watching application that charts your pulse continuously. The front of the sensor is the completely concur with the Heart logo. This is the side that achieves the skin. On the front you see a little round hole, which is the place the LED emanates through from the back, and there is furthermore a little square just under the LED. The square is an encompassing light sensor, absolutely like the one used in cellphones, tablets, and PCs, to change the screen brightness in different light conditions. The LED shines light into the fingertip or ear ligament, or other hair like tissue, and sensor examines the measure of light that ricochets back. The contrary side of the sensor is the place the straggling leftovers of the parts are mounted. We put them there so they would not hinder the of the sensor on the front. Without a doubt, even the LED we are using is a pivot mount LED.

3.4. ALCD

It is an alpha-numeric fluid precious stone show, through which the messages will be shown and furthermore the announcements required to give amid the season of emergency treatment is shown. We have utilized 20*4 lcd show. Additionally the power supply is given through battery.



Figure 4- 20*4 lcd display

4. IMPLIMENTATION

During the time spent creating ambubot, we initially centered around the robot development which must be

moved in every one of the headings. Additionally the model comprises of a microcontroller, through which the whole framework is mounted. At that point accompanies the sensors i.e, temperature sensor and heartbeat sensor that is mounted on the microcontroller through the drivers. Finally it comprises of a lcd show. In this show framework enlisted specialists number will be shown, data about the patient's heart rate and body temperature will be shown and this data will be sent through the message for the recommended specialists number for a few minutes, with the goal that the specialist becomes more acquainted with about the patient's condition until the point when they achieve the healing center. Later through the procedures it gives the messages that must be dealt with for the casualties. The whole procedure will begin with a crisis application that will be produced for an advanced mobile phones and requires the crisis rescue vehicle, through the GSM, it gives scope and longitude of the area and the message will be transmitted and gotten. Thus it follows the area and achieves where the crisis is been called, with the medical aid pack and the unit comprises of paracetamol, cleaning powder, ors arrangement, cotton, micropore tape and so on.

5. EXPERIMENTAL RESULTS

The steady usage of dispatching Ambubot that will touch base to the premises, conveys with an a crisis message and current position of casualty will be created by both of two applications, which are finished by sensor and cell phone application. These information will be assessed and there upon transmitted consequently to specialist promptly after a sudden wellbeing capture happens. The greater part of individuals utilize savvy cell phone. In this way the advancement of cell phone application associated with Ambubot is advantageous on the grounds that it can give on-time medicinal care to the casualty.



Figure 5- Experimental model of Robotic ambulance



Figure 6- Temp and heartrate is being displayed on lcd



Figure 7- First aid procedure is displayed on lcd

The whole framework is appeared in the above picture, which is mounted with the microcontroller in the middle comparing with gsm, heartbeat sensor and temperature sensor with the dc engine and furthermore it comprises of restorative pack. Subsequently android application is formulated and worked through gsm. Through the application the patients beat rate and the temperature will be sent to the specialist.

6. CONCLUSION

In this day and age, time is a critical issue in all the ways however when managing the medical problems time assumes a fiery part in each individual's life. The person who gets sudden breakdown in the wellbeing should be minded instantly. Hence thus a proficient means must be taken in thought. Along these lines, in this paper we have investigated and built up a machine robot that conveys an emergency treatment unit upon it to where the medicinal crisis is required to spare the lives when in require.

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