Smart Warrior Life Preserver

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ABSTRACT

In today's world the security of the nation depends upon the soldiers. So the safety of the soldiers is considered to be most important. Though there are many technologies most of them are not used here. Even though they are provided with protective bullet proof jackets which are very helpful to save their life, it lags in some upcoming technology. These jackets do not have the monitoring system and alert system. This can be overcome by our new proposed system with the help of varies sensors and embedded systems. In this project we have two units such as wearing jacket and monitoring unit. Soldiers can wear this as their normal cloth; each and every soldier in the war field is monitored in the monitoring unit individually. The different sensors are used to sense the health condition of the soldiers. The signals are transmitted by the jacket is received by RF receiver. Were each and every soldier has an individual attention. If any intimation is needed, an emergency action will carry on.
Keywords: Temperature sensor, Heart rate sensor, MSP430 Microcontroller, RF Transceiver.

I. INTRODUCTION

The main aim of this project is to develop a device for the soldiers to preserve their life. In this proposed system the technology is going to make the production of the soldier. We have different types of sensors in order to monitor the position and the status of the soldier. In the present bullet proof jacket they do not have any technical devices, so it is not possible to help them. In this project if any soldiers got injured the monitoring system will receive the information and alert other soldiers to help them by using RF transceiver. In the monitoring unit the LCD will display the heart rate and the temperature of the soldier in critical condition. In the preserver unit we have an alarm buzzer and emergency switch. When the heart rate of the soldier gets reduced the alarm is given to the near soldier. If a soldier needs any help they can press the emergency switch.

II. METHODS AND MATERIAL

Existing Method

A robust system for enabling robots to detect and identify humans in domestic environments is proposed.

Here presented a sample model on a live human detection and tracking system based on a microcontroller.

Using advanced technologies a fast, accurate, new robotic controlling device based on advanced control algorithms are developed. The critical part of the system is the microcontroller unit interfaced to the robotic circuitry; the mechanical movements are monitored and controlled by the microcontroller in control circuitry.

To detect the live person here PIR sensor called passive infrared sensor which is used to detect the person whether they are alive or not. The remote uses certain range of radio frequencies which is used to transfer the commands from the remote to the robot.
By using this we can change the direction of the robot. The CPU of the robot is microcontroller. The power is derived from battery.

Proposed Method

The main goal of this project is to save the soldiers in the border. Here we have two units such as wearing jacket and monitoring unit. Soldiers can wear this as

their normal cloth; each and every soldier in the war field is monitored in the monitoring unit individually.

The different sensors are used to sense the health condition of the soldiers. The signals are transmitted by the jacket is received by RF receiver. Were each and every soldier has an individual attention. If any intimation is needed, an emergency action will carried on.
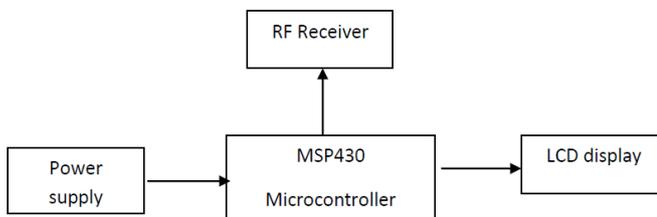
III. RESULTS AND DISCUSSION

BLOCK DIAGRAM

PRESERVER UNIT
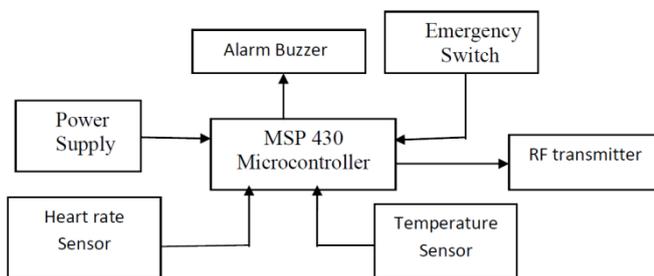
MONITORING UNIT

HARDWARE DESCRIPTION

TEMPERATURE SENSOR

Temperature meter or thermometer is a device that measures temperature gradient using a variety of different principles. The temperature sensor in which some physical change occurs with temperature, it immediately sends the message to the monitoring unit. A thermometer has two important elements: the temperature sensor in which some physical change occurs with temperature, plus some means of converting this physical change in to a numerical value. The output voltage of this sensor is analog, so it must be converted to digital to deal with it easily. The analog output voltage converted to 8-bit digital number by using the internal ADC of MSP430.

HEART RATE SENSOR

Heart rate sensor is design to give digital output of heart rate when a finger is placed on it. When the heart rate detector is working, the rate LED flashes in unison with each heart rate. This digital output can be connected to microcontroller directly to measure the rates per minute rate. It works on the principle of light modulation by blood flow through finger at each pulse.

The heart rate sensor provides a simple way to study the heart"s function. This sensor monitors the flow of blood through ear lobe. As the heart forces blood through the blood vessels in the ear lobe, the amount of blood in the ear changes with time. The sensor shines a light lobe through the ear and measures the light that is transmitted.

The clip can also be used on a fingertip or on the web of skin between the thumb and index finger. the signal is amplified, inverted and filtered, in the box. by graphing this signal, the heart rate can be determined, and some details of the pumping action of the heart can be seen on the graph.

ALARM BUZZER

A buzzer or beeper is a signaling device, usually electronic, typically used in automobiles, household appliances such as microwave oven and game shows. It most commonly consists of number of switches or sensors connected to a control unit that determines and which button was pushed or a preset time as lapsed, and usually illuminates a light on the appropriate button or control panel, and sounds a warning in the form of a continuous or intermittent buzzing or beeping sound. In an emergency time the alarm intimation is given to other soldiers.

RF TRANSMITTER

Many wireless links, such as phones and Wi-Fi, are bi directional and can even be Full duplex. However, many applications exist where transmit only is all that is needed for a given design and application .this often imposes unique constraints. for example, a keyless entry system for your car needs to be small sized, low power and transmit a unique keyed signal with enough transmit power to be dependable in all kinds of weather. The corresponding base stations typically

are not space constrained or power restrained, and hold the receive -only part of the design.

RF RECEIVER

A tuned radio frequency receiver is a radio receiver that is usually composed of several tuned radio frequency amplifiers followed by circuits to detect and amplify the audio signal .prevalent in the early 20th century,it can be difficult to operate because each stage must be individually tuned to the stations frequency. it was replaced by the super heterodyne receiver invented by Edwin Armstrong.

POWER SUPPLY

This is a small +5v switched mode power supply circuit. The circuit has internal current limiting and thermal production capacity.

MSP430 MICROCONTROLLER

MSP430 is a mixed signal microcontroller family. It built around 16 bit CPU. The MSP430 is designed for low cost and specifically low power consumption embedded application. The MSP430 does not have an external memory bus, so it is limited to on chip memory. Which may be too small for applications that require large buffers or data tables? Also although it has a DMA controller, it is very difficult to use if to move data off the chip due to a lack of DMA output strobe. It is a 8 bit Microcontroller. It works in low power (3.3v).The 40 pins make it easier to use the peripherals has the function over the pins. It controls the overall system.

A/D CONVERTER

An analog to digital converter is a device that converts a continuous physical quantity to a digital number that represents the quantity''s amplitude. It produces the equal digital value for a Temperature sensor output.

LIQUID CRYSTAL DISPLAY (LCD)

A liquid crystal display is a thin, flat electronic visual display that uses the light modulating properties of liquid crystals (LCs). LCs do not emit light directly. They are used in wide range of applications, including computer monitors, television, instrument panels, aircraft cockpit displays, signage, etc.

They are common in consumer devices such as video players, gaming devices, clocks, watches, calculators and telephones. LCDs have displaced cathode ray tube (CRT) displays in most applications. It displays the body Temperature, Heart rate rate and emergency condition in the monitoring unit.

EMERGENCY SWITCH

Emergency switches are used for a variety of applications and include illuminated pushbuttons, key lock switches, signal lamps, pilot lamps, buzzers, selector switches, illuminated selector switches, emergency pushbuttons, illuminated emergency pushbuttons, and pushbutton accessories. if a soldier needs immediate help, they will press this switch. Suddenly the message will send to monitoring unit.
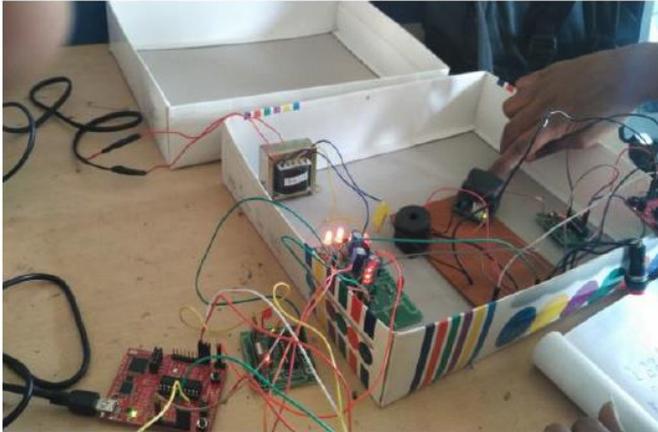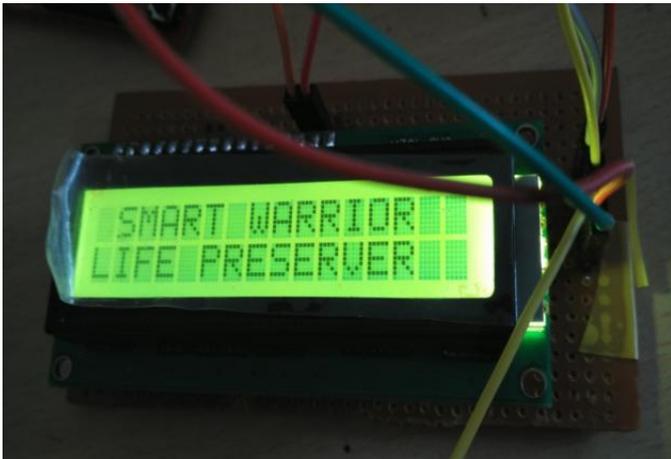
HARDWARE IMPLEMENTATION

PRESERVER UNIT
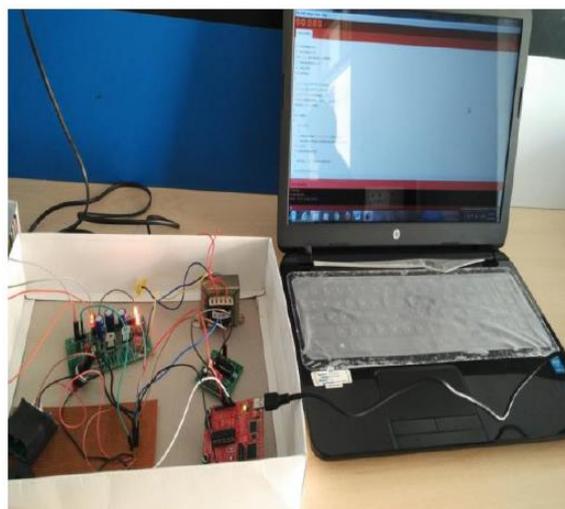
MONITORING UNIT
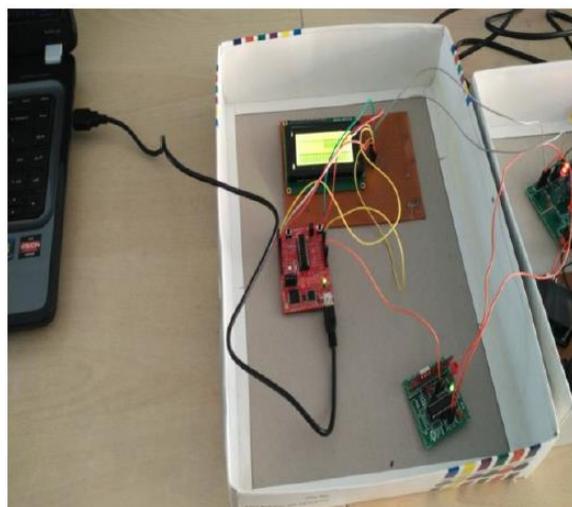
HEART RATE

SENSOR LCD

SOFTWARE IMPLEMENTATION
HEART RATE SENSOR
```
Void setup()
{
Serial.begin(115200);
}
Void loop()
{
int sensorvalue=analogRead(a0);
Serial.println(sensor value);
delay_x(5);
}
Void delay_x(unit32_t millis_delay)
{
Unitl6_t micros_now=(unitl6_t)micros():
While(millis_delay &gt;0)
{
if(((unitl6_t)micros()-micros_now) &gt;=1000)
{
millis_delay--;
micros_now+=1000;
}
}
```

TEMPERATURE SENSOR
```
Void setup()
{
Serial.begin(9600);
analogReference(INTERNAL1);
}
Void loop()
{
Long sensorvalue=0;
Long fahrenheitvalue=0;
Sensorvalue=analogRead(tempsensor)-630;
Fahrenheitvalue=(sensorvalue*761)/1024;
Serial.print(fahrenheitValue,DEC);
Serial.erite(„O");
Serial.println("f");
delay(1000);
```

IV. CONCLUSION

We have presented a system that allows preventing the soldier during the abnormal condition such as bullet hit, war field. Through this concept we can entirely monitor the soldier using RF transceiver and then information is sent to the monitoring unit during abnormal condition. RF transmitter gives the information about body temperature and heart rate. If the information is sent to the monitoring unit while the soldier is abnormal condition, alarm intimation will be given to the neighbour soldier. Battery needs only a small amount of power to operate the process. Through this concept we can easily rescue the soldier life and provide proper safety.

V. REFERENCES

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[2]. Wayne Soehren &Wes Hawkinson Prototype Personal Navigatio Navigation system‖,IEEE A&E system magazine April-2008. 2014