Watchman Strap using Arduino

Strap for Security

Ranjith Kumar R
Assistant Professor ECE Department
Sri Shakthi Institute of
Engineering and Technology
Coimbatore-62,India

Prasad R
ECE Department
Sri Shakthi Institute of
Engineering and Technology
Coimbatore-62,India

Ramesh Kumar A
ECE Department
Sri Shakthi Institute of
Engineering and Technology
Coimbatore-62,India

Titus Kirubakaran K
ECE Department
Sri Shakthi Institute of
Engineering and Technology
Coimbatore-62,India

Vasanth Kumar A
ECE Department
Sri Shakthi Institute of
Engineering and Technology
Coimbatore-62,India

Abstract— **This project is developed on the basis that it helps to identify the Monitor and record maximum number of vital body parameters, detect the real time location of the person, SOS Facility and Sufficient Battery power. Data like position and vital body parameters are obtained at regular intervals.**

Keywords—Node MCU, pulse-rate sensor, temperature sensor, GPS sensor, Coat.

I. INTRODUCTION

Many watchmen had been suffering due to the vital injuries which are being unnoticed and many are forced to move to the faraway places without knowing their exact locations. Large number of people serving in many vast places suffers in many attacks and various health issues that worsen their conditions. This project proves to be very efficient for the watchman to overcome the hardships. One of the objectives of this paper is to use a SOS facility which can sense such situations and alerts the nearby people for obtaining help. The sensors are designed in the manner that they are used as a wearable device. The methods of combining of the different sensors must not collide or affect the performance of the other sensors in the working. Sensors will pick up the vital signs from the watchman and the status of the watchman and position are shared through a secured WIFI communication. If no nodes are nearby to connect, the watchman is directed towards the objective or in worst case if the watchman is wounded, he/she is directed towards the nearest safe hospitalizing place. This helps them to work in an efficient manner. The GPS sensor provides the exact location of the person moving so that the person can be detected easily and given treatment. Securities working in the houses need to be in good health conditions and provided with the relative tools so that they can protect the people. If they are attacked by the theives or any other people, they may press the SOS button to acknowledge the people and others to safeguard themselves.

In Today's world, Security is the major concern for the people. So, the people are working in job like Watchman, Security needed to provide the safety of the person and their products. During their working, they need to be in a healthy body condition to accomplish their tasks. In order to analysis their condition and health, it is necessary to provide them with the strap built with sensor. At any circumstances for any person this strap can be helpful. Starting from person who is working inside a separate room to the person who is in the road, it can be used.

For example, a person seems to be lying in this chair in the sleeping position, his friend considered him as sleeping after sometimes in the purpose of awaking him he touched his hand. Later found out that he died, in front of him his friend was dying but he couldn't acknowledge it. Life has changed in the manner with the various development but the health of the people can't be judged anytime.

No one can judge the time and things happening around all of the sudden things are changed. It is our life we need to survive for the people who we love and care for us. We need to always protect us with all the safety measures that are capable for us. In that way the strap can be helpful for all the people to know about their body part condition.
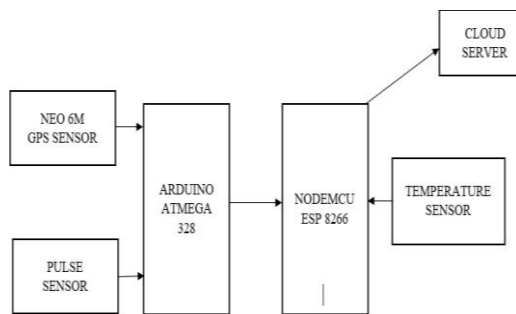.

Special Issue - 2020

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
ICEECT - 2020 Conference Proceedings

Fig.1.1 Sensor Block Diagram

The main block diagram of the circuit (supervisor) is shown in the figure 2.1

II. METHODOLOGY

Methodology is way of defining the selective method used for the working and modulating the components in a effective manner. The ways in which the process of the work can be easily modulated. Placement and Calibration of the sensors for different individuals. Providing Strap in a weightless manner for wearing. Attaching all the sensors in the strap coat. Sensor will pick up the vital signs from the watchman and the status of the watchman and position are shared through a dedicated WIFI connection. When the SOS button is pressed the concerned people are alerted and the whole place is saved form possible major attacks. After the attack, there may be many chance for their survival of the injured person. There are many minor injuries which could cause the person to death if not noticed within the time.

2.1 Essential Devices

The following are the components used:

➢ Node MCU
➢ Pulse rate sensor
➢ Temperature sensor
➢ Arduino
➢ GPS sensor
➢ Wires

Node MCU (microcontroller unit) is an source components of hardware and software development in the environment for the interconnection of all the functionalities in the combination of the sensors. It acts as an intermediate with all the different sensors correlating in an effective manner for obtaining the specified output.

Pulse Rate Sensor is a sensor used to measure the blood pressure of the person. It can be fitted with microcontroller to gather some power supply for its working. It can be designed in the format that the readings are obtained without any intermediate disturbances. The blood flow is more important for the person for his/her survival. Heart transmits the blood to the body parts in the defined flow of energy. The flow of blood can indicate the person is good in health.

Temperature Sensor is a mode of sensor used to measure the temperature of the body parts of the person. Body Temperature is the main source of the indication that progress on the condition of the body. It helps us to indicate that the person is absolutely normal and healthy. The sensor can be available in many different forms for obtaining reading. It can fitted in the coat in the manner that it not disturb the other sensors.
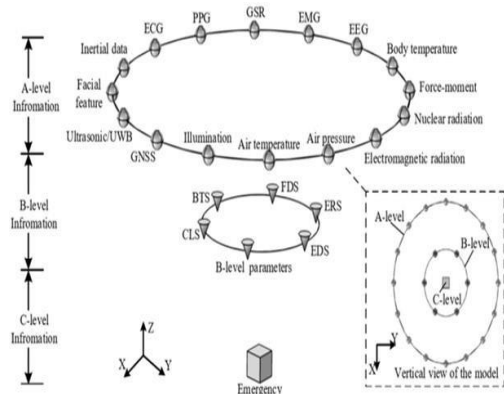

Fig 2.2 Coordinate device

Special Issue - 2020

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
ICEECT - 2020 Conference Proceedings

GPS sensor is the important component used in the process of detecting the location and tracking it. It can be helpful in the easy access of the person in the global world. This gives the accurate place of the person who is wearing it. It requires only less amount of the energy in the working process. Vast areas can also be accessible from the place we need. Using the GPS connected with the Arduino, the working can be compactible. It requires only less cost.

The below diagram explains the sensors being fitted in the coat

Fig 2.3 GPS with arduino

Fig 2.4 GPS sensor in coat

2.2 Algorithm

SOS is a signal or helpline which indicates to others that you are in danger and require help quickly**.** Survivor Outreach Services (SOS) is an Army program where services are provided through each component, Active Duty, National Guard and the Army Reserve, based on assigned counties within designated state and territories. The Army Reserve assigned counties and territories coverage services have been supported through an Army Reserve contract. The Army Reserve has regionalized Family Programs to include the SOS program. The Readiness Divisions and the 9th Mission Support Command will provide Survivor Outreach Services utilizing government personnel assigned to each of the seventeen assigned coverage areas.

It send the help request to the person who are being able to get the frequent reading of the person. The person who is able to monitor the sensor reading get the notification of "HELP" from the person in danger

Fig 2.5   Using of SOS facility

Special Issue - 2020

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
ICEECT - 2020 Conference Proceedings

The working of the GPS sensor with SOS is as follows:
- If the SOS button is pressed and after sometime signal is not available, then it means that communication between supervisor and sensor is not established.
  - The supervisor now monitors the last place where the location shared through GPS
  - But if the communication is not established even after sometime, then a message 'HELP' will be sent to the emergency contact.

- There are only two possible ways used:
  - The person is in normal condition
    - The supervisor doesn't receive any signal but he can monitor him.
    - And after few more times, to keep monitoring to see if any change has occurred. If no change continues monitoring.
  - The person is in abnormal condition
    - If any illness is detected,
      - Sensor transmits a message to the supervisor end and the GPS will share the location at the supervisor end.
      - The supervisor will send an emergency message to the terminal contact.
    - If any problem is not detected,
      - There are two possible reasons for this:
        - GPS failure
        - Sensor out of range
      - Two condition occurs emergency message will be sent to the terminal contact via the supervisor.

III.RESULTS AND DISCUSTION

Soldering is a method of connection between electronic components. The Heating of the relative part of the component it can be fused in the manner it is used for the soldering process. The reading are observed in the application to obtain the exact measures of the persons during the usage of the coat.The value are being noticed by the person , who is in charge of monitoring the security system or person.
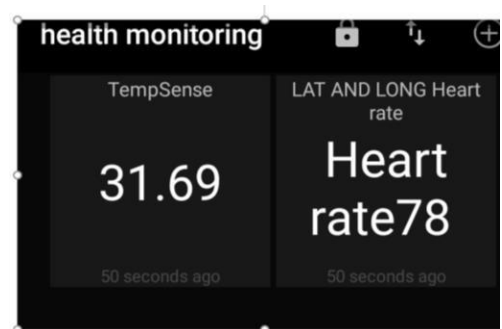

Fig 3.1

Fig 3.2

The method study of the components for the watchman strap are listed. The study mainly involves the operations involved in the wprking and the operation are mentioned. The study consists of the different parameters gives with the reading of the sensor .
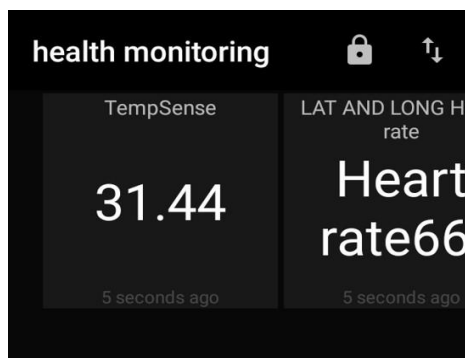

Fig 3.3

IV.APPLICATIONS

- ✓ All the sensors measuring different parameters are attached to single coat

- ✓ Cost effectiveness

- ✓ Provided with the safety measures of SOS Facility

- ✓ SOS Facility can be used to safe the person in immediate danger.

- ✓ Due to the use of less battery usage, power will be saved.

- ✓ It can increase productivity

- ✓ It may increase employee satisfaction**.**

- ✓ It could create fitter employees

- ✓ It'll help you make the most of other tech investments

V. CONCLUSION

The coat was designed with the specific sensors for the Measurements of the vital body parameters. The project work was accomplished in the time. The project was completed within the approprirate scheduled format. A Website is created to track on the values received from the sensors in a IOT platform. Sustained material like synthetic apparels on which the sensors and the other components to be mounted so that it makes the person very comfortable. A 5V Battery is used for power supply. It is a efficient and effective way of measuring all the vital body parameters.

The material is designed in the format that is helpful for all kind of person at various ages can be used for them. It is also made in such a way that if any water enters into the coat, it doesn't affect the sensors provided in the coat. The calibration and the soldering works are done in the manner that it doesn't result in any disturbance for the person who wears the coat. The readings are taken in the website which displays the temperature sensing and lat with long heart rate is being displayed under the title of the health monitoring.

The sensors are fitted in the random manner with the sufficient amount of power supply capable for the sensors to work in the efficient condition. The microcontroller focus on all the sensors interconnected with the facility provided with the coat. The SOS button is the major advantage for the person who got injured or suffering from any diseases or attacks. Wounded watchman can be attended faster than before. The location of the watchman is very much secured when communicated via WIFI. Loss of life in combat

VI. FUTURE SCOPE

This Strap can be used in various fields to analysis human health   and report their conditions. It provides all the sensors being attached within a single strap measuring. It is useful for soldiers and used in Hospital, Banking and Working Places. Used for old aged peoples also. SOS Facility can be used to safe the person in immediate danger. Due to the use of less battery usage, power will be saved. It can increase productivity It may increase employee satisfaction It could create fitter employees. It'll help you make the most of other tech investments.

In future, there may be need of various safety measures and health monitoring kits accessable within the short period to reduce the person from entering into the critical condition. Large number of defects and diseases inside the human body get unnoticed at the first stage of the diseases occurance stages. In later stages it may result in loss of life and person who got affected may result in the transfer of any communicable infections to all other people around the surrounding environment. This problem can be controlled to maximum stages and lose of the life can be prevented.

This method can be used in security person as well as the working person include drivers (who health is important all the people life travelling in the public transport are depend on him) and scientists or lab workers carrying chemical substances, person at the electrical works etc. More we develop in the field of technology, higher the range of security needed and it may also result in the some harmful affects to the human body. No one can sure about the things happening in the future but we can prevent ourselves or take some precautions for the upcoming challenges.

ACKNOWLEDGEMENT

REFERENCES

1. Compact Millimeter-Wave sensor for Remote Monitoring of Vital Signs (2012) By Sasan Bakhtiarki

2. Secured Communication for MANETS History (2013) by Angayarkanni, Palaniyammal

3. Heart Beat Based Biometric Random Sequence Generation to secure

4. Wireless Body Sensor Networks (2018) By Sandeep Pirbhulal, Hehe Zhang

5. Review of smart Clothing in Military (2016) By Johan Galland, Sofia Scataglini

6. On the Secure of Reconfigurable Multi-Layer Network Design for Critical Information Dissemination in the Internet of Battlefield things (2018)By Muhammad Junaid Farooq

7. Systematic Analysis of a military wearable Device based on the multi-level fusion Framework (2019) Han shi1, Han zhao