Smart Gloves: A Monitoring System for Disabled Patients

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Abstract

Venture clever gloves is a operating version which incorporates sensors to degree parameters like hand motion with gravity sensor and heart beat with coronary heart beat sensor. A micro-controller board is used for reading the inputs from the affected person through sensors or any abnormality felt or any requirement by using the patient then the transmitter (hc12) transmit the facts to the some other circuit which includes microcontroller, receiver(hc12), liquid crystal display show, gsm modem. The monitoring system receive a message through a (HC12) and give a message to the nursing staff through display the message on LCD screen with patient id , patient bed number and their requirement because of that nursing staff directly go to attend the patient with their requirement. This circuit sends the message of patient requirement to the family and their respective doctors through GSM modem. Due to this their family and respective doctors also know about their patient's requirement. Also all the messages along with heart rate are uploaded through Wi-Fi on cloud. So doctors can check later, if any requirement is there. This is very useful for destiny evaluation and assessment of affected person's fitness condition. For more versatile clinical packages, this challenge may be improvised, via incorporating blood stress monitoring structures, dental sensors and annunciation structures, thereby making it beneficial in hospitals as a completely green and committed affected person care gadget.

Keywords: Iot, Patient Monitoring; Think Speak; Arduino; Esp-32; Health Care

1.   Introduction

Lots of sensors and IOT technology due to this hospitals management have managed many patients with less time with efficiency. So Smart Gloves: A Monitoring System for Disabled Patients is defined as attender of patients who are unable to speak or call nursing staff. This can reduce patient attending time of nursing staff. Now a days hospitals are doing management of health of patient with hospitals management can approach many patients in less time and doctors are aware of condition of every patient at a single point because of that no any patient have affected due to less interaction because doctors can interact every patient on time due to lots of IOT technology and sensors[1].

Works have done for ease for hospital nursing staff and patient as well as patient in this project. Developed a system through which nursing staff directly come to the patient with their requirement. So it is easy for nursing staff as well as patient they directly communicate each other without wasting time. The project has in two circuits are designed circuit-1 is implemented in patient hand that contains gravity sensor , heart beat sensor, and micro-controller and transmitter whereas circuit-2 is implemented near nursing staff counter which contains receiver, LCD display, GSM module and ESP-32 micro-controller in which Wi-Fi and Bluetooth comes in build in it. Through Wi-Fi data can upload to the cloud server for monitoring the behavior of the patient and analyze them for further treatment and through GSM module their family and respective doctor get the message regarding patient requirement. So this is easy for the nursing staff and to attend the patient because they got the message with patient id, bed number and his requirement so nursing staff directly go to the patient with their requirement [3]. This is helpful for patient also they got treated on time. Historically the detection structures had been most effective found in hospitals and had been characterized by using big and complex circuitry which required high power intake. Non-stop advances within the semiconductor technology industry have led to sensors and microcontrollers which can be smaller in length, quicker in operation, low in energy intake and lower priced in fee. So everybody can implement this setup at domestic additionally in step with the affected person requirement. The project mainly helps the patients who can't speak properly and this will save time to get them assistance. Patient will get their requirement on time [2],[3].

AIM:

The aim of the project is to develop an IOT based system that provides convenience to patients and hospital nursing staff for assisting the disabled patients.

OBJECTIVE:

- To study requirement of hospital and nursing staff treating paralyzed, and physically disabled dumb patients.
- To explore working of motion detection sensor and its application.
- To learn working of pulse rate sensor module and its implementation.
- To understand the requirement of message display at nursing station using LCD display and format the output as per requirement.
- To identify the requirement of sending valid messages to doctors and family members of the patients, and implement it using GSM module.
- To implement a complete system with the help gravity sensor, pulse rate sensor, LCD display, GSM module and collect the patient's data.

SCOPE:

This project has used for paralyzed patients who can't speak properly. So they can say his requirement with motion of his hand. So patient conveys his requirement very conveniently to the nursing department and they will come to the patient directly and attend them with their requirement. So this project will also convenient for nursing department as well.

Existing System:

In hospital patients have to press the switch then a alarm rang near the nursing staff counter and when they have come to attend the patient then they have to check every patient where a small light is emitting then they know that which patient called them then they go to that patient and ask about their requirement and they go and come with the patient need. So this process is little bit time consuming. Sometimes it will be very late for any patient. Because patient point of view every minutes is very important. And if any family member or doctors want to know about their patient when they take medicine and when they take food then they have to ask to nursing staff to know his patient details and sometimes nursing staff also don't know properly because they have to attend many patients. So it happens sometimes [6],[7].

Proposed System:

As discussed above, nursing staff takes some times to attend the patient because they don't know which patient called them and what they want and sometimes they don't know which patients when takes medicine or food that is important for a patient. So introduced a system where design a two circuits one circuit that implement on patients hand and second circuit that have to implement near nursing staff counter. So due to motion of patient hand one message will display on circuit-2 with patient id and bed number and message according to their requirement. So nursing staff will directly come to the patient with their requirement and attend them. And a message directly sends to the family member and doctors. So they get to know directly that when their patient was took food and medicine. Finally, upload the data on cloud for further treatment and analyze the patient behavior.

CIRCUIT-1:

In circuit one have gravity sensor that takes the input from the motion of the patient hand and another sensor is heart beat sensor that takes the input from the patient body and both the sensor gives the data to the arduino Uno atmega328 micro-controller after that controller analyze the data and gives to the HC-12 transmitter and then transmitter gives this data to the receiver of another circuit [5].
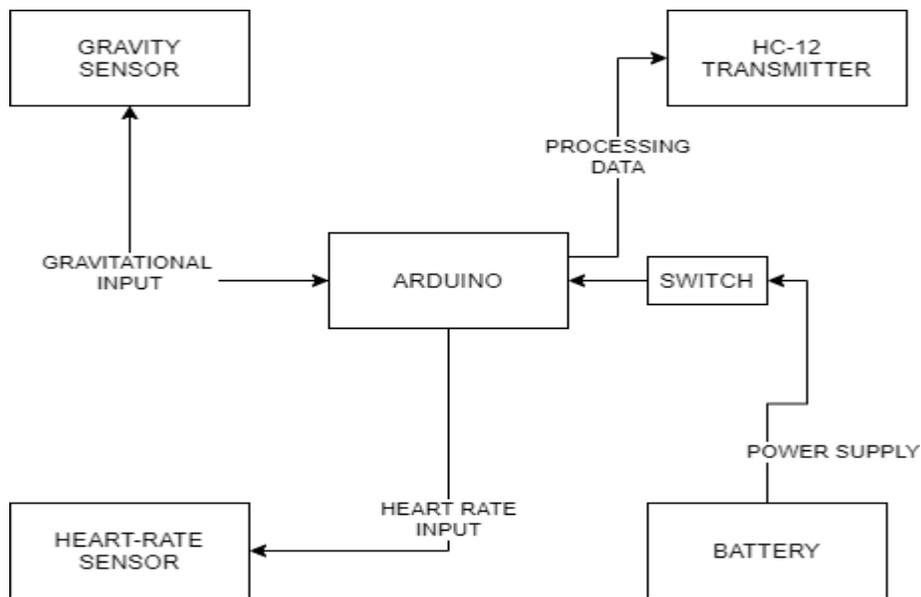
Fig.1 Circuit 1 Block Diagram

CIRCUIT: 2

In circuit two have HC-12 receiver that receives the data from the circuit one gives to the micro-controller ESP-32 that comes with the inbuilt Wi-Fi and Bluetooth that takes the data and display the message through LCD on screen and send the message to the family and their respective doctors through GSM module and upload the data through Wi-Fi on cloud for further experiment on patient [4][8].
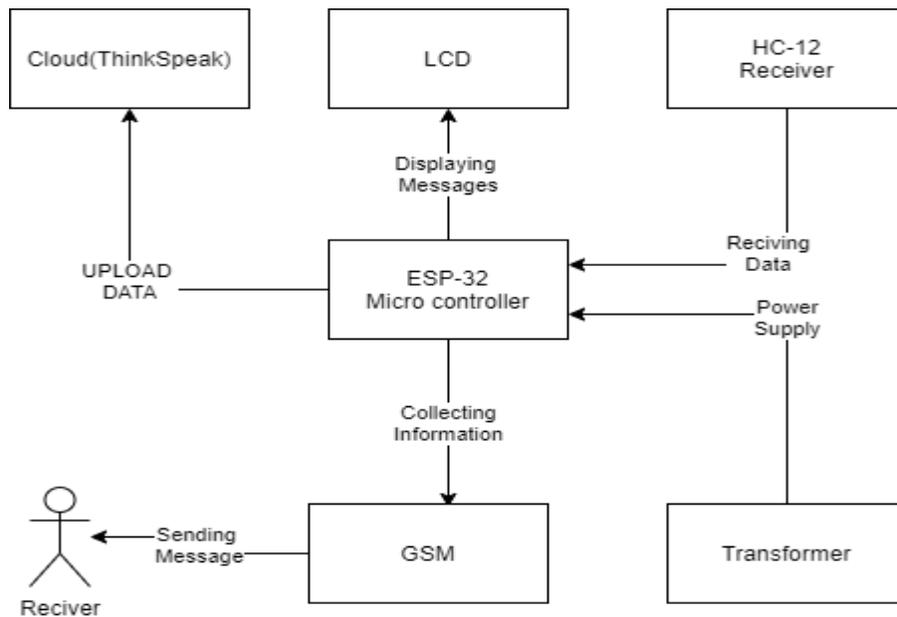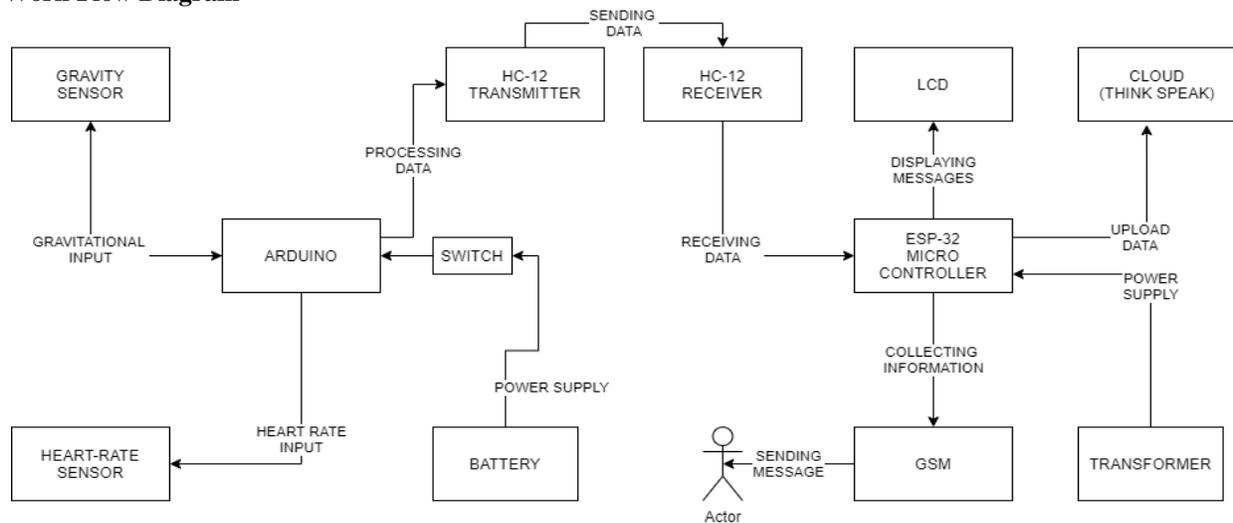

Fig.2 Circuit 2 Block Diagram

Work Flow Diagram -

Fig.3 work flow diagram

Conclusion:

The aim of the challenge changed into correctly completed. All of the man or woman modules like heartbeat detection module, movement detection module and so forth. And remote viewing module gave out the meant consequences. Extra essential truth that got here up all through venture layout is that everyone the circuit components used within the far flung fitness detection machine are available without difficulty. With the development inside the incorporated circuit industries microcontrollers have emerge as inexpensive, have multiplied processing speeds, miniaturized and strength green. This has led to improved improvement of embedded systems that the healthcare experts are adopting. These embedded structures have additionally been followed in the smartphone era. With expanded net penetration in most developing nations via cellular telephones, and with use of iot has turn out to be followed at a quicker price. The remote health care machine makes use of these ideas to provide you with a machine for better exceptional of life for humans in society. From an engineering attitude, the project has seen concepts received through the pc technological know-how and embedded machine being nearly implemented. The electrical circuit evaluation information is used at some stage in design and fabrication of the character modules. Electromagnetic fields analysis is used in the wireless transmission between microcontrollers and software program programming used in the course of programming of the microcontrollers to provide you with a final completed circuit system.

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