Wireless Sensor Network of Physically Disable People Used Multipurpose Handy Device at Low Cost

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Abstract:

At present scenarios disable people need aids/appliances to achieve the capability for self-care and freelance living. As per the consistent Survey conducted by our team, disabilities prohibit the chance for his or her economic and social growth. In these project Polyvinyl chlorides is used for constructing a stick in handy device and for monitoring the Physically Disabled People health conditions several Sensors (Blood Pressure, Temperature and Pulse rate) are used, IR infrared obstacle avoidance sensor is used to detect the obstacles and it gives the voice depends on the standing direction including MEMS detection of the disabled people. Besides for data communication between systems Bluetooth and GPS module is integrated with PIC micro controller which helps to locate people and the health information's is sent through the application software by his or her family members and nearby hospitals. The experimental results show the promising outcomes when compared to Fuzzy Method(FM),Artificial Intelligence(AI), Dynamic Method (DM), match analysis tool (MAT)

Keywords: *polyvinyl chlorides, fuzzy method, MEMS detection, GPS module.*

1. Introduction

The Multipurpose helpful gadget is a novel arrangement that utilizations cutting edge innovation to watch the client's (Physically Disabled) physical wellbeing parameters and encourage a recouped personal satisfaction at a persuading value point. In this Project the vital sensor organize technique will deal with the system unwavering quality by giving the basic Quality of Service (QoS) arrangement for physically handicap individuals. The plan goes for serving to the crippled people by transportation suitable,durable, experimentally made, advanced, standard guides and apparatuses among their reach. In this venture for incapacitate individuals to ceaseless observing their medical issue, avoidance for snag and when clients will come to the unconscious circumstance the MEMS are recognized by utilizing remote sensor arrange. The sensor gather the information send to through the GSM and GPS following their area to transmit close-by healing facilities. A.J.Monica Seles [1]

actualized a strategy utilizing wearable sensor to checking medical problems, for example, temperature, pulse,and weight and showed by utilizing LCD. The outcomes send to the emergency vehicle or else specialists. Jesus Cabal-Aragón [2] executed a technique utilizing GPS following crippled individuals area in wheel seat. In the event that client endures an epilepsy scene, sound sign begins and a message is sent to his/her overseer. In the event that client change to vanished, directions isdirected to his/her doorman and a communication is showed with a myth to request bolster besidesattitude found. This framework permits crippled individuals to be more freed and be controlled in long separations, being certain that can get bolster if something turns out badly. Vojkan Mihajlovic [3] actualized a technique utilizing human mind movement checking for their everyday life by utilizing remote EEG and wearable EEG without clinic required. Mary M. Rodgers [4] executed a strategy

utilizing late progress in wearable sensor and frameworks that screen development, physiology, and environment. It observing for Parkinson's infection, stroke, head and neck wounds. Puneet Dohbal[5] remotely controlled wheel seat is proposed with the assistance of accelerometer and Zigbee module whose demo model is as of now intended for physically debilitated individuals so they can control their seat themselves and the remote correspondence gives an additional preferred standpoint if wheel seat is not with them then they can control seat.

2. Existing System

In this existing system they can used height adjustment type stick for the physically disabled people as shown in figure 1. This type of stick which is made by means of height adjustment and light weight [6]. It consists of first aid box, MP3 player and camera. The camera can be used to track the location and the results were stored and send it through the USB port to computer. All the information can be gathered by means of computer through the camera. MP3 player can be used for hearing songs while walking [7,8].
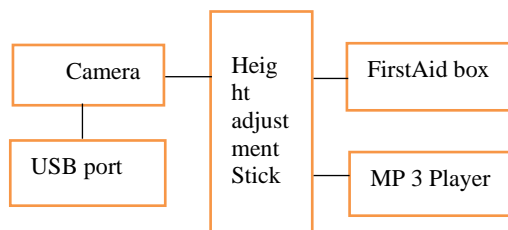

Figure 1: Existing system block diagram

Drawbacks: In this system there is no possibility to monitoring the health conditions (pressure, temperature, heartbeat, pulse) of the physically disabled persons and there is no voice indication to the physically disabled people for while walking to detecting an obstacle.From this existing system we are propose to monitoring the health conditions and if the physically disabled person detect the obstacle means it gives the voice indication and to track the locations of the physically disabled persons using GPS.

3. Proposed System

In the wake of investigating all issues about physically impaired individuals and we have outline one innovation for checking their physical handicaps by utilizing multi-reason helpful gadget. This Multi-reason helpful gadget is fit for observing the wellbeing conditions like weight, temperature, beat rate, and so on. We utilize IR infrared snag evasion sensor to recognize the impediments and it gives the voice relies on upon the

standing heading of the incapacitated individuals and the GPS module is coordinated with PIC small scale controller which finds people and the wellbeing data's is sent through the application programming by his or her relatives and adjacent healing facilities. The medical aid box and battery can be included for their fundamental needs.

3.1 Block Diagram

The transmitter segment comprises of temperature, weight, Pulse rate sensor, PIC microcontroller, GPS LCD, GSM modem [9]. The beneficiary segment comprises of cell phone. In this block diagram device equivalent yields are transmitting to regulator. The controller is assisted by simple info sources and, in addition, compares current rates with predefined information after a remote sensor setup, like the Zig bee module (10,11), controlled sign output and current rate data transmission. The combination of sensor components and Zig Bee Remote LAN is the remote sensor environment. Transmission speeds up to 250Kbps at the range 50 m routinely and also effectively decreases power consumption. Zig bee switch and cell phone are regulated at the beneficiary end of the rates.

3.2 Block diagram Description

The following figure 2 shows the operation of the entire system a follows.

3.2.1Temperature Sensor: Temperature sensor recycled to measure the infection of the collective body. Body Temperature deviations depend upon on the time to period and day to day, but no more than 10C.So it needs to monitor continuously the patients. It also used to self-monitoring the

patients easily [12]. If the temperature level is too low, the patient needs medical reserve. Because too low temperature leads to death occur and also for high level. It is measured in degrees Celsius (oC).

3.2.2Pulse rate Sensor: It essentially combines a guileless optical heart rate sensor with augmentation and clamor termination hardware outline it quick and modest to get dependable heartbeat readings. Moreover, it tastes switch with only 4mA current draw at 5V

3.2.3Blood pressure sensor: Weight sensor is utilized to quantify the systolic and the diastolic weight level utilizing the gadget. Systolic is the developer of the binary number methods the weightiness fashionable the supply directions before the emotion pulses. Diastolic is the lower of the two quantity procedures popular the supply routes among temperament pulses. It is measured in millimeter mercury (mmHg).

3.2.4Obstacle Sensor: IR infrared deterrent shirking sensors are shabby, little sensors frequently used to distinguish questions close to the sensor. The Infrared sensors work by sending an infrared light with some recurrence, and afterward distinguishing if a portion of the light has reflected back to the sensor. The most widely recognized ones have a computerized yield showing if protest has been distinguished. A number of them have the alternative to be empowered or crippled [13].

3.2.5LCD: The greater part of LCD Presentations accessible in the marketplace remain 18X2 (That implies, LCD showcases are fit for showing 2 appearances each consuming 18 Types a), 18X2 LCD Displays. It has 14 pins. It utilizes 8 lines for similar material in addition to 3 controller indications, 2 associations with control, one additional for complication modification and two suggestions for LED back light. LCD receives binary kinds of signs, one is information, and additional is controller. These signs remain professed through the LCD module after position the RS stick. Presently material can be checked additionally from the LCD show, through carting by R/W stick high [14]

3.2.6GPS: In the worldwide market, a few frameworks to enhance productivity in voyaging frameworks that utilization design acknowledgment, GPS/RFID, self-ruling voyaging ability, GPS to control the stick, and some different frameworks to enhance controlled stick for battery time for extended stretches. This venture will utilize a GPS framework, installed frameworks through all composition and controller, and a SMS/GSM module [15].
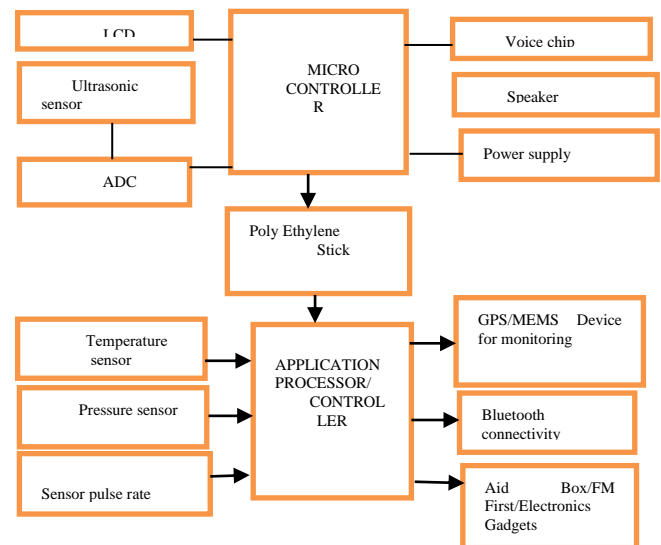

Fig 2: Proposed system block diagram

3.2.7GSM: GSM Modem with sequential interface from casual to bottom. Use to send SMS, make and receive calls, and do other GSM activities through direct AT fees from small-scale controls and PCs.

3.2.8 ADC: ADC amounts vary from the perfect because of varieties in the created procedure normal to every single coordinated circuit (ICs) and finish different wellsprings of error in the simple to-computerized change prepare [16].

3.2.9 MEMS: A MEMS is a small machine that has both mechanical and electronic segments. The physical measurement of MEMS can go from a few millimeters to short of what one micrometer, a measurement commonly littler than the width of a human hair.

3.2.10 Power Supply: A power supply unit is required to give the suitable voltage supply. This

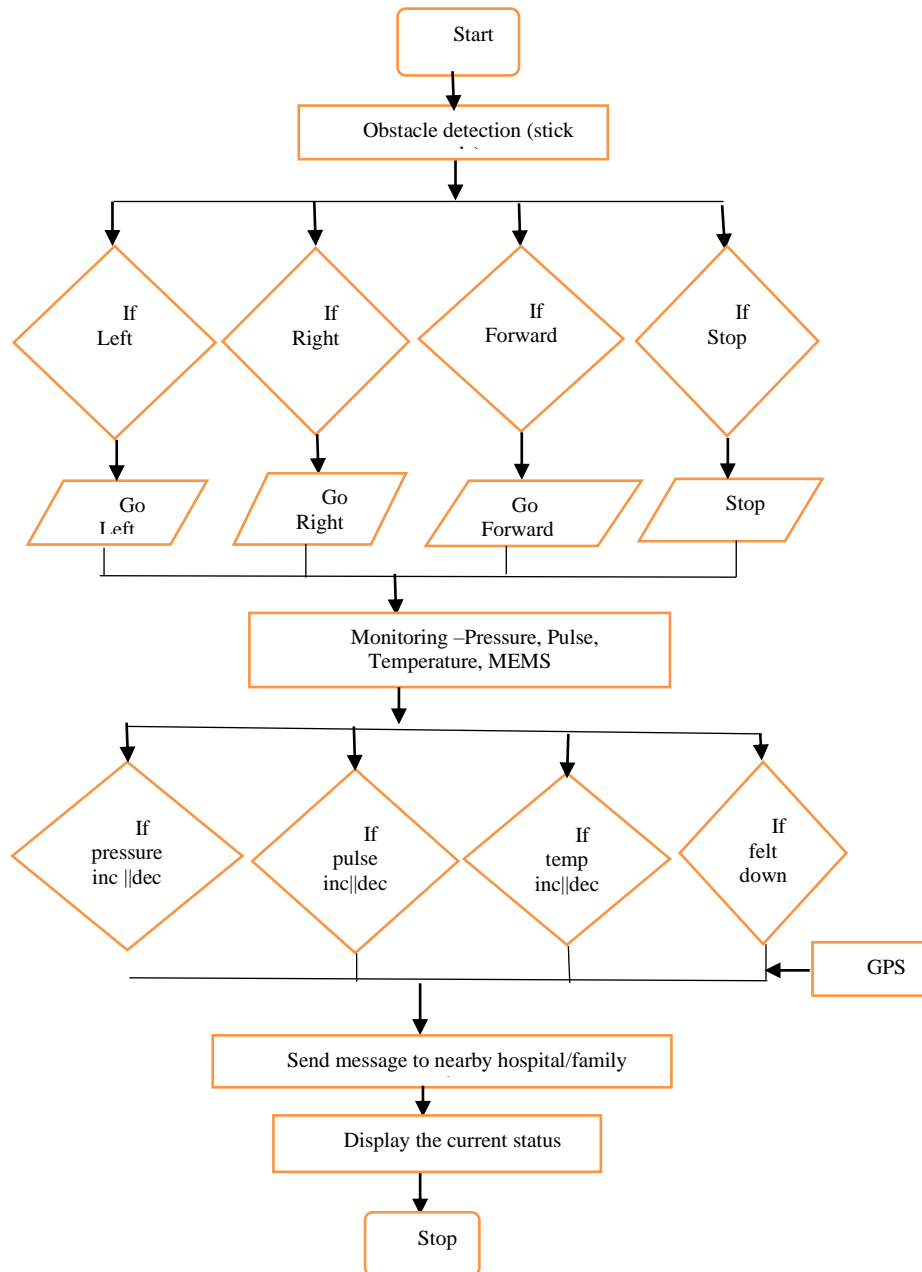unit comprises of transformer, rectifier, channel and a controller [17].

Figure 3:Flow diagram of proposed system

3.3 Flow Diagram

The multipurpose convenient gadget is fit for detecting all the previously mentioned physical parameters as in figure 3. The sensor qualities are transmitted to an advanced cell through Bluetooth Low Energy (BLE) or Bluetooth (BT), the App running on the portable gathers the information from the wrist-band and transmits to the cloud. The report will then be   sent to App-the beneficial

analysis for the client will be sent to the relatives and to the family specialist in light of the settings.

4. Simulation Output

In this paper PIC microcontroller is utilized for handling the information. The recreation circuit is drawn according to circuit graph utilizing the Proteus 8 programming. The benefits of PIC controller is dependable, control origination less,

writing computer programs is simple, associate simple gadgets specifically without utilizing additional hardware. The execution of the PIC controller is quick because of RISC design and the failing of PIC controller is less. The client will achieve oblivious state. The sensor detecting the different estimation. The resultant of estimation showed to their relatives or specialists. The accompanying figures demonstrates that the reenactment yield:

The figure 4 shows the output of which the physically disabled people have felt down, the emergency message is send to the family members and nearby hospital.
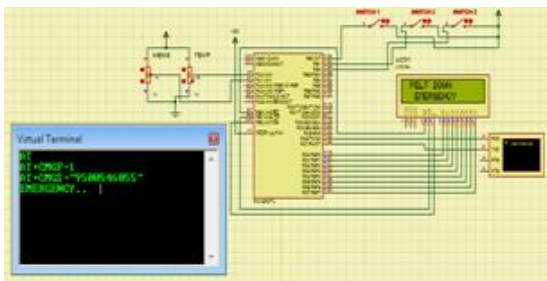

Fig 4:Simulation output of the felt down Emergency

The figure 5 shows the output of which the physically disabled people while walking, they detect any obstacle means it display the message as STOP and gives also a voice indication.
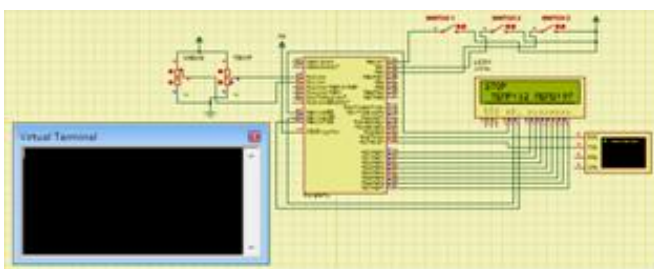

Fig 5:Simulation output of STOP(MEMS)

The figure 6 shows the output of which the physically disabled people while walking, they can detect any obstacle means it display the message as TAKE LEFT and gives also a voice indication.
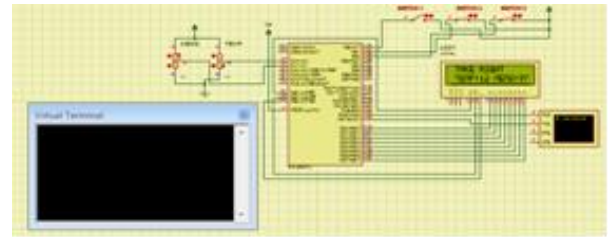

Fig 6:Simulation output of TAKE LEFT(MEMS)

The figure 7 shows the output of which the physically disabled people while walking they detect, any obstacle means it display the message as FORWARD and gives also a voice indication.
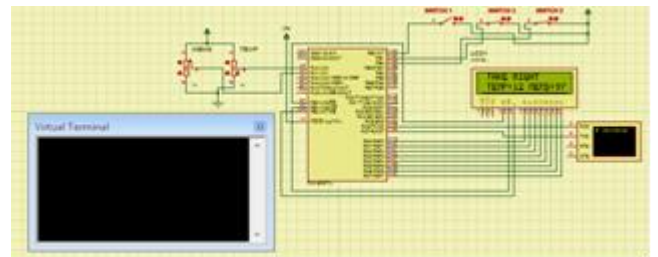

Fig 7:Simulation output of FORWARD(MEMS)

The figure 8 shows the output of which the physically disabled people while walking they detect, any obstacle means it display the message as TAKE RIGHT and gives also a voice indication.
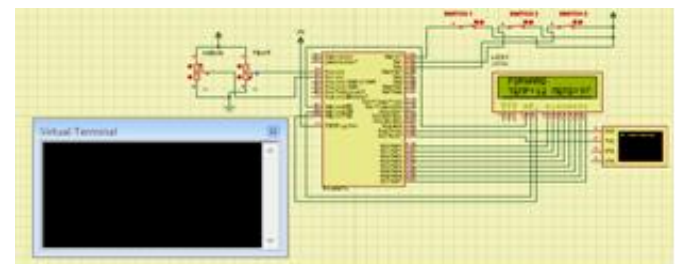

Fig 8:Simulation output of TAKE RIGHT (MEMS)

5. Experimental Results

In these project Polyvinyl chlorides is used for constructing a stick in handy device and for monitoring the Physically Disabled People health conditions several Sensors (Blood Pressure, Temperature and Pulse rate) are used, IR infrared obstacle avoidance sensor is used to detect the obstacles and it gives the voice depends on the standing direction including MEMS detection of the disabled people. Besides for data communication

between systems Bluetooth and GPS module is integrated with PIC micro controller which helps to locate people and the health information's is sent through the application software by his or her family members and nearby hospitals. The experimental results shows the promising outcomes when compared to Fuzzy Method(FM),Artificial Intelligence(AI), Dynamic Method (DM), match analysis tool (MAT).

A. Performance

The data communication between systems Bluetooth and GPS module is integrated with PIC micro controller which helps to locate people and the health information's is sent through the application software by his or her family members and nearby hospitals. The Multipurpose Handy Device (MHD) which have a better performance as in figure 9. when compared to Fuzzy Method (FM), Artificial Intelligence (AI), Dynamic Method (DM), match analysis tool (MAT).
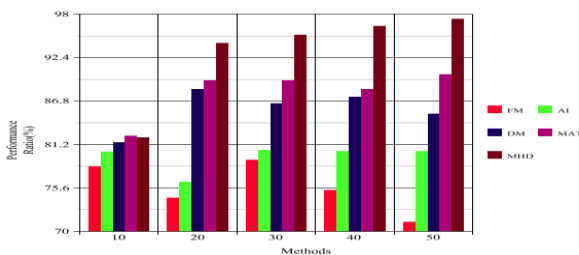

Fig 9: Performance Ratio of Multipurpose handy Device

B. Stability Analysis

The multipurpose handy device (MHD) which have more stability as in figure 10.when compared to Fuzzy Method (FM), Artificial Intelligence (AI), Dynamic Method (DM), match analysis tool (MAT).
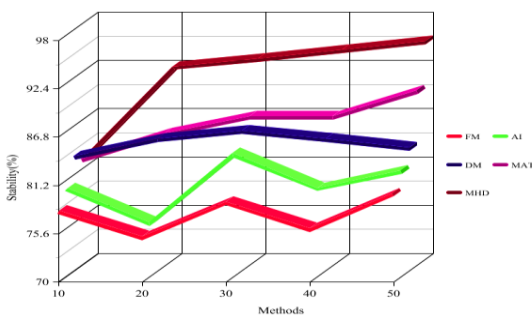
Fig 10: Accuracy of Multipurpose handy Device

C. Accuracy

The multipurpose convenient gadget is fit for detecting all the previously mentioned physical parameters. The sensor qualities are transmitted to an advanced cell through Bluetooth Low Energy (BLE) or Bluetooth (BT); the App running on the portable gathers the information from the wrist-band and transmits to the cloud. The report will then be sent to App-the beneficial analysis for the client will be sent to the relatives and to the family specialist in light of the settings. The Multipurpose Handy Device (MHD) which have a better accuracy as shown I figure 11.when compared to Fuzzy Method (FM), Artificial Intelligence (AI), Dynamic Method (DM), match analysis tool (MAT).
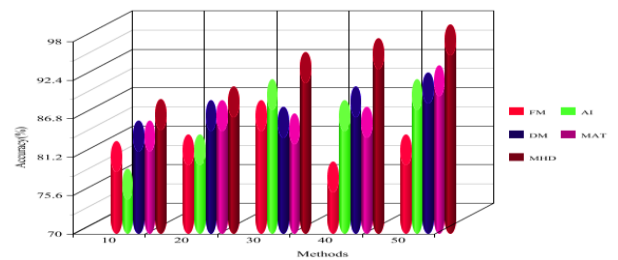

Fig 11: Accuracy of Multipurpose handy Device

D. Error Rate

The multipurpose handy device (MHD) which have minimum error rate as in figure 12. when compared to Fuzzy Method (FM), Artificial Intelligence (AI), Dynamic Method (DM), match analysis tool (MAT).
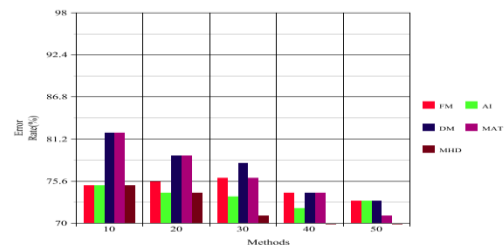

Fig 12: Error Rate of Multipurpose handy Device

6. Conclusion

The paper has reviewed the described works on wireless sensors and devices for

watching health conditions by using stick. The physically disabled persons health condition to monitoring is a pulsating area of investigation and a lot of marketable improvement are described. It is projected that many more light-weight, high-performance wireless devices will be available for checking a wide range of health situations by using stick. The tasks faced by the existing design will also be lectured in coming devices. The improvement of light-weight physiological sensors will lead to contented wireless devices to monitor altered ranges of health conditions of residents. This system has shown good efficiency, fast response, and has worked with high accurateness using marketable modules. In this simulation, outcomes are simply gotten using PROTEUS software toward afford the physical period observing by disable people. We get the participation from sensors and treated by means of microcontroller. For emergency purpose it can send the indication to the caregivers. This method remains low-slung cost, self-monitoring device and used in inaccessible parts resourcefully.

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