MOTION BASED MESSAGE CONVEYER FOR PARALYTIC/DISABLED

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Abstract: According to a search, we found the statistics of the disability population in our country is very high. So, we came to know that the count of physically disabled people is increasing day by day. Across hospitals and NGOs serving disabled people. These people are not capable of full-body movement as compared to a normal person and also, they need a caretaker always along with them to do activities. In such a situation we propose a system that helps disable person display a message by just simple motion of any part of his/her body. The main aim of the proposed system is to implement a low-cost reliable system that will help to establish communication between disabled patients and family caretakers. We are using an accelerometer device which is used to detect the motion. It is the device that is used to detect the motion. Our system provides a reliable and important solution to various issues faced by caretakers in traditionally communicating with disabled people and helps them to be in independent mode.

Keywords: Quadriplegia, Disability, Motion, Accelerometer.

I. INTRODUCTION

Across hospitals and NGOs serving disabled people. Now, these people are not capable of full-body movement as compared to a normal person. In such a situation we propose a system that helps disable person display a message by just simple motion of any part of his body. The device needs to be mounted on the user's finger or hand. Movement of the hand in a particular direction will send a command to the LCD screen which will then display the information specified in direction. The user now just needs to tilt the device at a particular angle to convey a message.

II. PROPOSED SYSTEM

The proposed system and accelerometer as the main part of our project. It is the device that is used to detect the motion. We will put the accelerometer on any movable body part of the person who is physically challenged. The main purpose is to replace the conventional approach of patient-caretakers communication with modern technologies that provide a much faster and reliable way to do so. If he/she got some problem he will move the body part which contains the accelerometer in a particular direction as per the programming. The device will detect the motion and will give an output signal to the Node MCU. Node MCU will detect input as per the programming done for the direction of the accelerometer. After detection of motion, it will give output on the LCD and different hand gestures were given the different messages which were converted into voice messages using the audio module with help of an audio playback record as per the program.

WORKING PRINCIPLE

The device will be started first by giving a power supply to it. Accelerometer, the temperature sensor will be on. To work the device there needs to be the motion of the accelerometer in some of the angles in any direction. In the backend, there will be provided programming instructions for each movement. Node MCU will detect input as per the programming done for the direction of the accelerometer. If there is a motion of the device in any direction then there will be an alarm and a message will be sent to the receiver which will be displayed on the LCD connected to the receiver. If the device is constant then there is no device motion and we can't notice any changes.
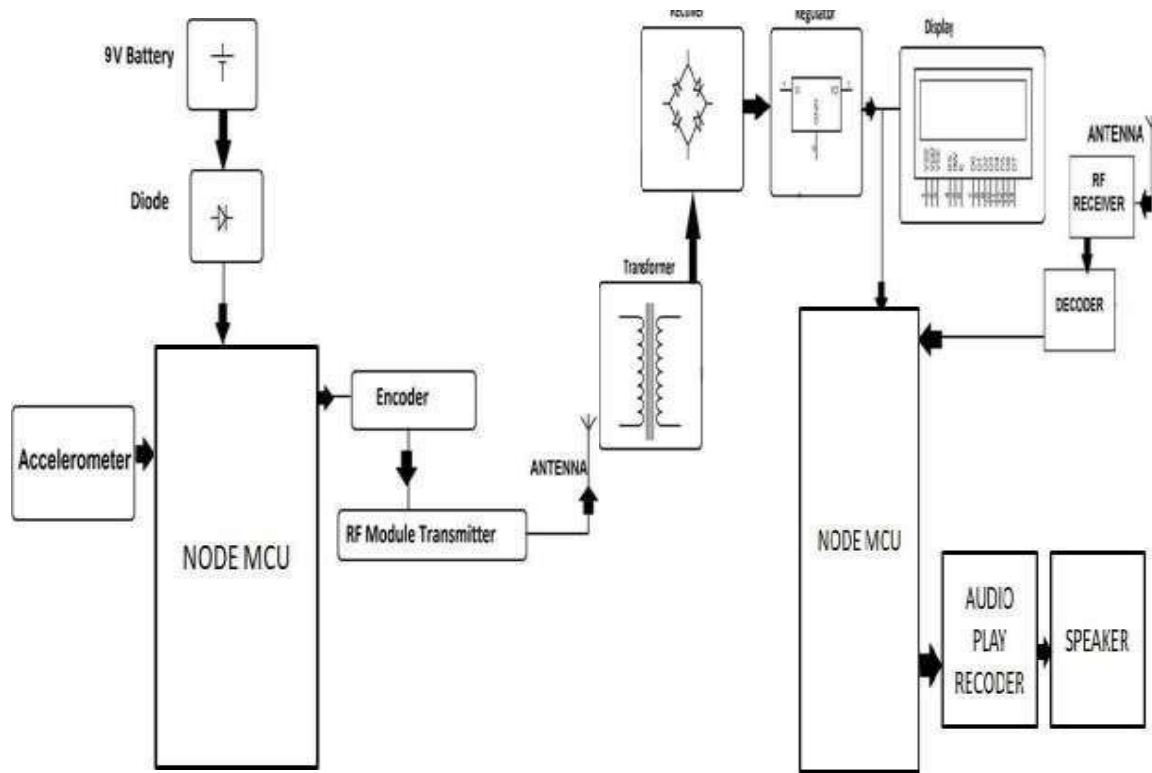
Fig. 1 Transmitter Side Fig. 2 Receiver Side

III. MATERIALS AND METHODS

Materials used in this project are RF Transmitter, Drivers, Node MCU, LCD, Accelerometer and Relay.

RF TRANSMITTER

These are wireless transmitters that work on the 434MHz frequency. Use these components to transmit position data, temperature data, even current program register values wirelessly to the receiver. They can easily fit into a breadboard and work well with microcontrollers to create a very simple wireless data link.
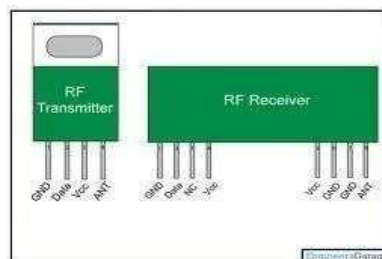

Fig. 3 RF Transmitter

DRIVERS

Depending on the Operating System you are using with the Node MCU, the appropriate driver must be installed. Generally, Windows 10 immediately recognizes the CP2102 chipset while the CH340G may require separate installation. Drivers are available for Windows, Mac, Linux, and Android. *We* also have a local copy of the CP2102 drivers.

Fig. 4 Drivers

NODE MCU

The Node MCU (Node Micro Controller Unit) is an open-source software and hardware development environmentbuilt around an inexpensive System-on-a-Chip (SoC) called the ESP8266. Low cost. Integrated support for WIFI network. Reduced size of the board. Low energy consumption.
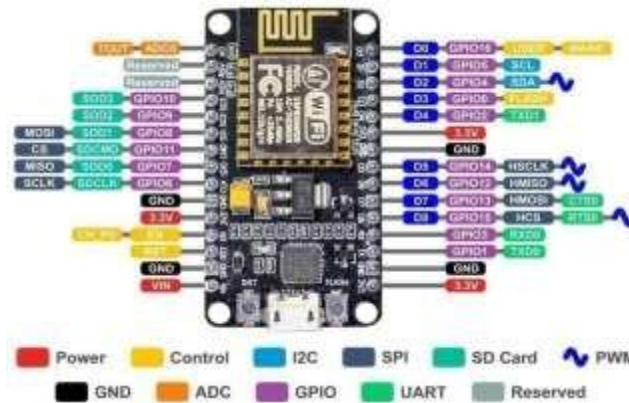

Fig. 5 Node MCU

LCD

The LCD screen is more energy-efficient and can be disposed of more safely than a CRT. Its low electrical power consumption enables it to be used in battery-powered electronic equipment. It is an electronically modulated optical device made up of any number of segments filled with liquid crystals and arrayed in front of a reflector to produce images in color or monochrome.

Fig. 6 LCD

ACCELEROMETER

An accelerometer is a tool that measures proper acceleration (the rate of change of velocity) of a body in its instantaneous res frame this is different from coordinate acceleration, which is acceleration in a fixed coordinate system. An accelerometer at rest on the surface of the Earth will measure an acceleration due to Earth's gravity, straight upwards of g ≈ 9.81 m/s2.
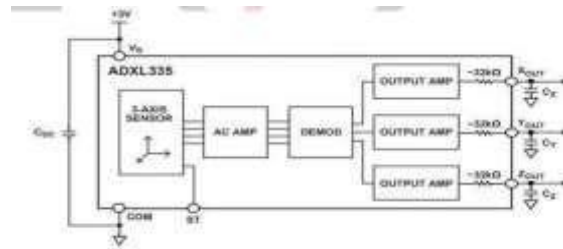
Fig. 7 Accelerometer

RELAY

A relay is an electrically operated switch. Many relays use an electromagnet to operate it.
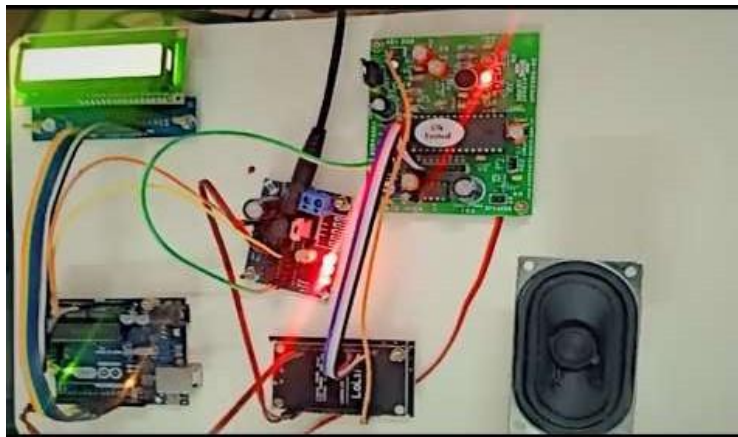
V.RESULT AND DISCUSSION

Fig. 8 Motion based conveyor using Node MCU

Other relays may have more or fewer sets of contacts depending on their function. The relay in the picture also has a wire connecting the armature to the yoke. This ensures continuity of the circuit between the moving contacts on the armature, and the circuit track on the printed circuit board via the yoke, which is soldered to the PCB. When the current to the coil is switched off, the armature is returned by a force, approximately half as strong as the magnetic force, to its relaxed position.

V. CONCLUSION

In this system where we can send the signal given by patients wirelessly through the gesture movement by body parts to the caretakers, the information. Hence the information will be displayed on the LCD. Each patient will have such a device installed on or around his body and all such patients will be centrally linked to the receiver at the caretaker side. This project will definitely help the people who are not able to do the full movement of the body.

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