

Implementation of Voice Recognition And Touch Screen Control Based Wheel Chair For Paraplegic Persons

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Abstract- *In the world there are many problems occur due to accident, age and health problems for that there are many sensing techniques and devices are existed already. To help people with overcoming such defects, the intelligent wheelchair system which we will have implementing such system uses dual control for navigation in familiar environments. In this system there are two modes of input control to the wheelchair that are Voice recognition and Touch Screen . Touch screen sensor is modeled for moving in different direction by pressing finger on touch pad for control appliances. With the help of Voice command technique people can also move intelligent chair in different direction using voice controller.*

Keywords- ARM Microcontroller, Touch-Screen, Wheelchairs, Bluetooth , BT VOICE App.

I. INTRODUCTION

Due to accident, age and health problems peoples have physical illness & Inability and unable to walk with limitation in performing tasks. So,wheelchairs are used for physically disable & paralyzed persons. Today's technology is fast shifting towards automation which minimizes the need for human interaction for serving to the environments. There is a wide scope to develop smart wheelchair to assist these physically challenged peoples. This paper elaborates a new idea to develop an intelligent wheelchair using smart phone with ability to control the movement of wheel chair using voice or touch-sc control the movement of wheel chair using voice or touch-

This paper elaborates a new idea to develop an intelligent wheelchair using smart phone with ability to control the movement of wheel chair using voice or touch-screen. Literature survey of smart wheelchairs concludes that, 40% of patients have difficulties in steering wheelchair & movement in daily life.

These scenarios include situations in which the persons can't open door easily for that requires precise control. For overcome this drawback we going to use touch-screen & voice recognition. By using smart wheelchair person can open & close the door. The response and distance covered by wheelchair can be further improved by using RF module. Therefore the smart wheel Chair is developed to overcome the above problems allowing the end-user to just perform safe movements and accomplish some daily life important tasks.

Designing a simple and efficient advanced wheelchair system for to assist people The two modes of input control to the wheelchair are voice recognition and touch screen. When one want to change the direction, then voice recognition system is used and another want to on/off the electrical appliances ,touch-screen mode is used, the touch screen sensor is modeled by pressing finger against the various quadrants on the touch screen, which has different values programmed for different direction. This can also be controlled through simple voice commands using voice controller.

II. LITERATURE SURVEY

screen. control the movement of wheel chair using voice or touch-screen. control the movement of wheelchair using voice recognition.

A wide range of supportive devices and modern equipment has been developed to help improve quality of human life. Around many researches done in the field of wheel chair by using voice recognition. Due to signal processing algorithms and availability of powerful computers, computer based speech processing system nowadays have reached complex structure with high accuracy & grate performance. The challenge of system is to maintain standard performance while using limited computation and memory resources. In 1933 Harry Jennings and his disabled friend Herbert Everest, both mechanical engineers, invented the first lightweight, steel and collapsible wheelchair. Everest had

previously broken his back in a mining accident. Everest and Jennings saw the business potential of the invention and went on to become the first developed wheel chair for handicap people.

Recent technological advances are slowly improving wheelchair and power chair technology. In 2010 addition of geared, all-mechanical wheels for manual wheelchairs is a new development incorporating a hypocycloidal reduction gear into the wheel design. The 2-gear wheels can be added to a

In 2011, Andrew Slorance who is British inventor developed Carbon Black the first wheelchair to be made almost entirely out of carbon fiber. Recently, EPFL's CNBI project has succeeded in making wheelchairs that can be controlled by brain impulses and control wheelchair by using brain impulses.

In 2015 Krishna Pal Tiwari devolped voice controlled autonomous wheelchairs ,in this system voice recognition is used as user interface. Here they are creating a speech recognition based wheel chair for handicapped patients and The patients who cannot walk and have to use a wheel chair can steer the wheel chair by their voice. In this project there is one input device i.e. mic which takes input from the user in the form of speech, speech recognition system recognize the input word spoken from mic.

In 2016 Mohammed Ismail, Syed Fouzan Ishaqui invent Head Gesture based control of wheelchair for a paralysed persons for indoor environment movement. In this system they utilized the acceleration data to recognize the hand gestures and then transfer the gesture information which indicates certain motion commands into the wheelchair's smooth motions. It's a trial method to realize the natural interaction for the older and handicapped with the wheelchair through the hand gestures[6].

III. PROPOSED HARDWARE

In this project there will be a 3 whell wheel chair. The rear wheels are fitted with 2 12V DC Motors. A castor wheel is fitted in the front side.A bluetooth module and touchscreen modules are fitted on the main board.An android app is used to send voice commands to microcontroller using Bluetooth of mobile.

BLOCK DIAGRAM

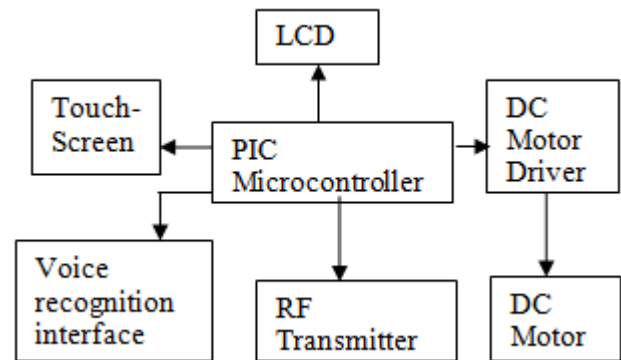


Fig.1. Block dig. For Voice-recognition & touch-screen based wheel-chair.

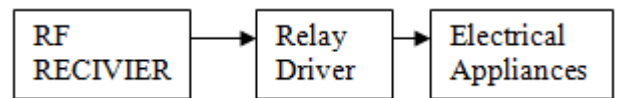


Fig.2. Block dig. For RF RECIVIER

A 12V 1.3Ah battery is used to supply power to the circuit. In this system there are two input devices, speech recognition system and touch screen. The system consist PIC Microcontroller as we need the port for LCD, Touch screen, Bluetooth & DC motor. In this project we are going to use a pic microcontroller ic 16f877A since it has 32 IO pins 8 10 bit ADC channels , one serial port , two timers . It also has I2C and SPI Interface . Also it has only 35 instruction set . As compared with other microcontroller with same specifications it's cost is lowest.LCD Display is for showing the command which is receive from microcontroller.

IV. WORKFLOW

This project consists of two parts voice interface & touchscreen interface.

Voice Recognition:

In this part we have to intall an app voice bot on our mobile. the we have to switch on the power to our wheelchair a bluetooth HC05 is connected to the serial port of the arm processor LPC2148. then we have to press pair device on the Voicebot app.Then we have to press connect button on the app. the voicebot app will get connected to the bluetooth on the wheelchair . then we have to touch on the mic logo on the app. we have to speak forward / reverse /left /right/stop .the app will send the spoken word to bluetooth on the wheelchair.The words are sent at 9600 baud rate. now ARM processor receives the commands from bluetooth. If the command is forward it generates logic which is applied to the

1293 DC motor driver. for forward it generates 1010 logic for reverse 0101 .The robot will move as per the logic received.



Fig.3.Experimental set up for Voice recognition & touch-screen.

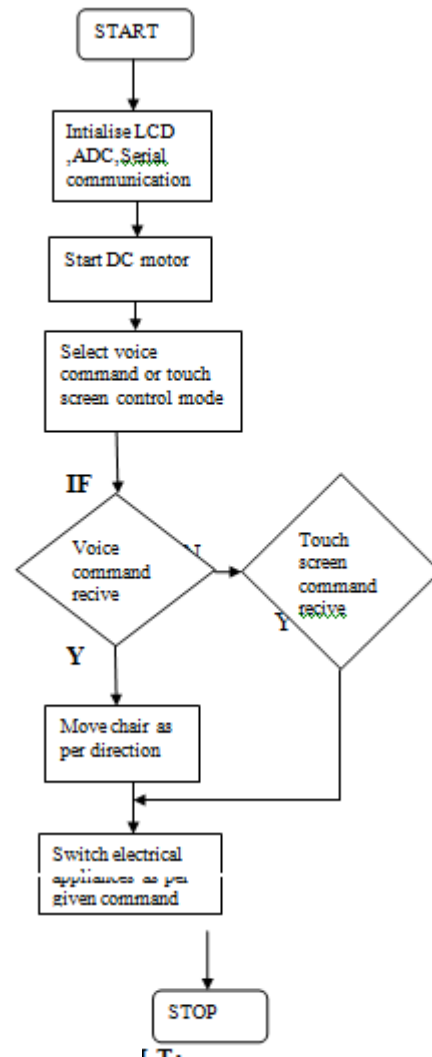


Fig. 3. model for wheelchair.

Touchscreen interface-

It consists of a touch keyboard ,a HT12E encoder a 433MHz transmitter,HT12D decoder , 433MHz receiver.For working of wheelchair we have to touch 1 to 8 keys to generate 1 to 8 commands on touchkeypad.when we touch 1 key it generates 0001 code , 2-0010 code , 3-0011 code ,4-0100 code. This generated code is given to HT12E encoder,the serial output of HT12e is conneted to Tx433 RF transmitter.This data is transmitted through a serial. Rx433 receiver receives the data . the generated data is given to ht12e decoder ic ht12d and it generates the same code sent by transmitter. The outout of decoder is connected to relay driver . If logic received is 0001 relay1 is switched on,if logic is 0000 relay 1 is off .

A. FLOWCHART



V. RESULT

In voice recognition system when we give command on BT VOICE APP,this command to towards the microcontroller through Bluetooth of mobile.LCD shows the command like FORWARD,REVERSE,LEFT,RIGHT,STOP.



Fig .4. Result display on LCD.

According to command wheelchair work.fig a. shows command display on LCD.

VI. CONCLUSION

Recent advancements in the technology are making lives easier for everybody. This system used for the self-dependency of physically challenged, handicapped, paralyzed people. It reduces the manual effort for a attaining parlayed persons. The command for controlling the motion of a wheelchair by specified voice commands. Further that, the development of this project is done with less cost and affordable any common man.we are mainly focusing on touch screen and voice recognition based system interface, more advancements can be done through more research

The efficiency of the voice command control system can be further improved by implementing neural network based algorithms.We can attach various sensor to paralyzed person and we can send this data over internet so that we can monitor his health status remotely.

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