

# Smart Robotic Vehicle for Physically Challenged patients

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**Abstract:** Now a day peoples are suffering to steer for them this project is beneficial. This project the designing and Development has through with an embedded system. This proposed system explains “smart robotic vehicle” that how it supports to the patients, who are cannot walk, talk and mentally disabled patients by incorporating voice commands or through buttons, the patient action which might run and takes an action of auto. The voice message is sending over a cellular device like cellular phone which is connected to Bluetooth which message is conveys to the raspberry pi for the curb of the vehicle. Likewise because the buttons accustomed send string message to raspberry pi to regulate wheelchair that who cannot represent them. When the patients says “Go” the vehicle will move within the progressive order, the chair would move within the backward direction for “Back” and parallel left, right for revolve it in left and right guidance and stop. to prevent the vehicle. If any voice command or touch get fail when ahead a wall/well than with the assistance of IR/PIR sensor will detect that object/obstacle and stops immediately. This proposed project is useful to save lots of patients energy and time dependence on the others for the movements of wheelchair-using physically soul, and also If person is serious means if he/she get fever a right away action will take and acquire an awake to the his/her relative or head of the house member and therefore the person may also intimate her situation. If the person his out of the range than immediate alert will move to the top of the house member with location.

**Keyword:** Raspberry Pi, IR Sensor, Pulse Sensor, MCP3008

## I. INTRODUCTION

According to the survey of India census 2011 out of 121 crores of population, 2.68cr individuals square measure disabled that is 2.21% in total population. There in disabled population fifty six means that 1.5Cr peoples square measure males and different four hundred and forty yards means that 1.18cr peoples square measure females. During this majority of individuals from rural areas and remaining from cities (urban areas). The disabled individual's proportion is exaggerated two.13% in two001 to 2.21% in 2011, in rural areas it's like 2.21% in 2001 to 2.24% in 2011 and in urban areas one.93% in 2001 to 2.17% in 2011.

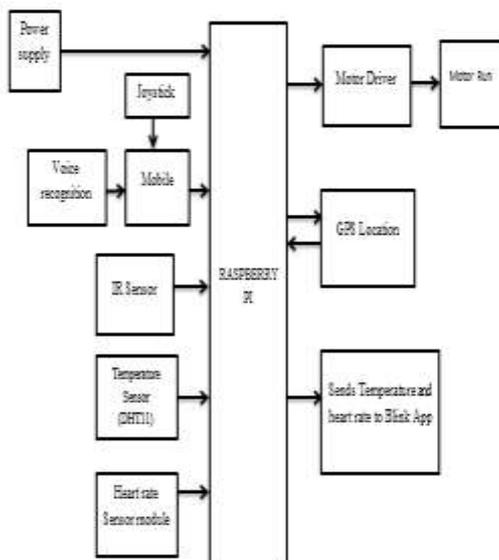
Disability is common in maturity however it stepping into early age due accidents and conjointly a number of individuals square measure plagued by their birth like blind, mentally disabled, paralysis, locomotive incapacity etc. the persons WHO square measure with incapacity they have another person facilitate to try and do their personal activities and one person should be beside them however

victimization this chair somewhat the persons aren't any required. With this project youngsters and adults are gets benefited. The planned system is style with associate degree embedded system, for suppose that incapacity person have to be compelled to depart for his/her independence purpose this project can useful. The Robotic chair overruns the potency of ancient high-powered machines by introducing management with by victimization voice and buttons. These machines will ease the lives of the many disabled individuals, notably those with severe incapacity by increasing their vary of motility. For the otherwise disabled individuals, there square measure inventions of wheelchairs, which may be captive victimization hands. Some individuals move the wheelchairs victimization their own hands. Some have to be compelled to admit others. However typically such individuals face several issues if they don't get a person to makeover their wheel chair or they will get tired. during this project we have a tendency to square measure progressing to create a wheel chair which may be controlled mechanically victimization the voice commands. The system permits physically disabled person to regulate the

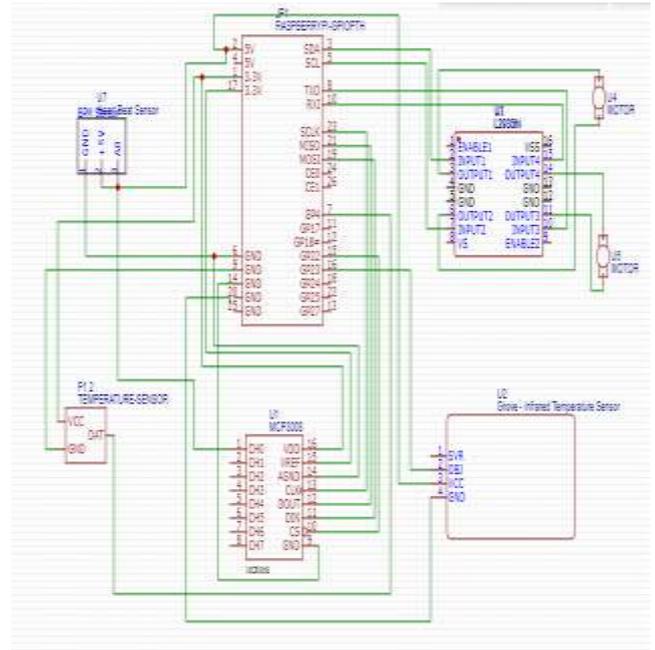
chair simply while not the requirement to use the hands. The movement of the chair depends on the control and drive system that consists of raspberry pi and motor driving. Once the voice recognition system acknowledges the voice commands with relevancy the keep memory, the several coded digital signals may be sent to the raspberry pi. It then controls the chair consequently.

By the planned approach, delineated during this paper, low-cost, easy and friendly answer for the voice controlled platform are going to be given that's user friendly, fully-customization per the language spoken by the user and can facilitate in improvement of users freelance quality. employing a Smartphone golem is already a vigorous analysis field with many open opportunities and promising prospects. Another recent and really victorious technology. This analysis is predicated on Voice and buttons controlled chair style. The project conjointly assimilates to use of IR sensors to notice obstacles among vary of four meters and notifies the system and stop the chair until more command. During this work, sensible chair management victimization raspberry pi and Bluetooth Module via golem application is given.

## II. PROPOSED SYSTEM



Block Diagram



Schematic Diagram

## III. WORKING

The wheel chair system schematic is to indicate the interfacing of every module with Raspberry Pi and this may contains information of every pin in each module and this schematic will helps us to style the kit and what purpose of labor is processing with the mobile application, raspberry pi, temperature sensor and Pulse sensor. The motors will run in line with the message which is given by patient through mobile. Suppose if any patient is voice or joystick may make a difficulty and find visiting hit any obstacle than the IR sensor will recognise and stops the motors without moving the vehicle. For running the motors input gets from raspberry pi the input pins are 2, 7, 9, 15 and output pins are 3, 6, 11, 14 which are to run the motors.

The diagram at right shows the most output connector of the ability supply when viewed from the tip. Common represent functions, i.e. all red wires are +5 volts, all black wires are common and then on. The connections most useful to us as haunters are the +5V (red wires) and therefore the Common or ground (black wires). The adapter may be connected by secure 2.1mm center-positive plug into the board's power jack. within the setup section we want to define the four

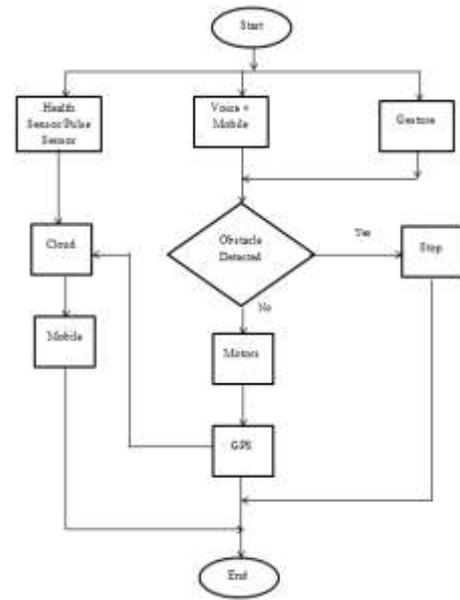
control pins as outputs and output as an Raspberry Pi input. Here we also must set the frequency-scaling.

In Wheel seat L293D might be a regular Motor Driver is utilized, which may drive 2 DC engines all the while. The L293D switches it sign in sync with the info got from the raspberry pi. This makes a way for the present to stream, going from the V contribution to change S1 to the engine, at that point to change S4 thus the leaving from the circuit. This progression of the present would make the engine turn one way and may likewise handle to show the engine inside the other path by just changing the terminals. Here the L293D IC controls four dc engines for isolating the link wires.

MCP3008 is employed as ADC (Analog to Digital Conversion) in Raspberry Pi. In Raspberry pi board has only digital pins no analog pins for that purpose using MCP3008 , as show in figure below. Among those anyone or all of them may be used as inputs for analog voltage. This suggests that it'll map input voltages between 0 and 5 volts into integer values between 0 and 1023. So for each  $(5/1024= 4.9mV)$  per unit. it's connect a potentiometer or pot to the 'A0' channel, and that we are visiting show the ADC result on a straightforward display.

Pulse Sensor is connected through via MCP3008 by using Channels, therein any channel can use in MCP3008 to attach the Raspberry Pi. Temperature Sensor connected to on to the pin 21 of Raspberry pi. For voice commands and joystick operations visiting use with Mobile application.

#### IV. FLOW CHART OF THE PROJECT



Flow chart of the Project

#### V. RESULT

Above is the picture of the seat assembled physically out of iron. For the best possible working of the wheels, four engines are introduced in the wheels on all the four sides. For the best possible comfort of sitting on the seat a plastic seat can likewise be utilized rather than a metal seat. Yield of the venture is appeared in beneath with an outcome. In result is demonstrated that the patients temperature and area, alters course according to quiet prerequisite.



(a)



(b)  
Result of the project

## VI. CONCLUSION

This project style and construction of sensible Robotic chair with the assistance of raspberry pi and Bluetooth Module. It works to makeover as per the user commands. The developed system when conniving the circuit that allows physically disabled to manage their wheel victimisation Associate in Nursing automaton application in their sensible phones and it's conjointly been tested and valid.

## FUTURE SCOPE

This project is extended to create it stair climber which be very useful for the people that are littered with walking disability. This Project is extended to create orthopaedic physical movement while moving. It may be utilized in industrial applications for moving objects remotely from one place to other place.

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