Voice-Recognized App-based Motorized Wheelchair and Household Intelligent Systems

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Abstract:- **Due to accidents, ageing, and health issues, the widespread frequency of missing limbs and sensing systems is a big worry in today's world. To help people with such flaws, the proposed intelligent wheelchair system employs dual control for transportation and home automation. Voice recognition is the way of input control for the wheelchair and home automation. This can be operated using basic speech commands via a voice based application. By storing a command in the speech recognition kit for each direction control, the recognition time is greatly shortened, resulting in a speedy arrival at the destination. The wheelchair has DC brushless motors and controlled by the voice command technology. With this proposed method, wheelchair mobility in all directions is achieved with high accuracy. This technology allows the disabled to automatically proceed to their destination and effortlessly access their home.?**

Keywords- IOT, Wheel Chair, Home automation, Disabled Peoples.

I .INTRODUCTION

Wheelchairs have long been considered the standard means of transportation for many people who are physically incapable of walking. These wheel chairs allow patients to move about the world with ease, at least until their mobility becomes impaired due to age, injury or disease. However, while they provide the desired mobility, these devices can often become uncomfortable and even dangerous after prolonged use, especially if the user's body shape or weight are not compatible with the design of the wheelchair. Often, wheelchair users are forced to undergo painful surgeries r undergo intensive physical therapy in order to correct this problem. In recent years, scientists have developed numerous designs that can convert any automobile into a mobile wheelchair. Many of these vehicles are equipped with special sensors that detect obstacles in the road ahead, allowing them to slow down automatically before colliding with the obstacle. Other automobiles are designed specifically to transport individuals who cannot walk; the rider sits in the vehicle and uses controls built into the dashboard to control the speed and direction. Home automation allows you to control your environment through voice commands. You can use your smartphone to operate switches, turn lights on and off, unlock doors, etc. This has become much easier over time with the advances in technology. There are many devices that have been created to do this job and they all have their own pros and cons but here we'll focus on the ones that are used for household purposes.

Here we can developed the voice controlled wheel chair and automation of home for physical wheel chair and automation of home for physically disabled peoples.

II. PROPOSED METHOD

This section detailed the methodology of the intended method for improving the voice-controlled wheel chair and home automation for disabled peoples. The person in the wheelchair is not required to accept assistance from the other person. With the use of his own vocal command, he can travel forward, backward, left, and right, and he can also stop anyplace. He can also access his home using his voice command as needed. They have access to all of his home's doors and technological appliances.

In this project contains two main parts. One is wheel chair and another one is home automation. Those are controlled by voice commands. Here we can connect in IOT with mobile application, which is very useful to access the home appliances in anywhere in the world and the wheel chair is connected with IOT. So we can access the wheel chair and home automation in a single mobile application.
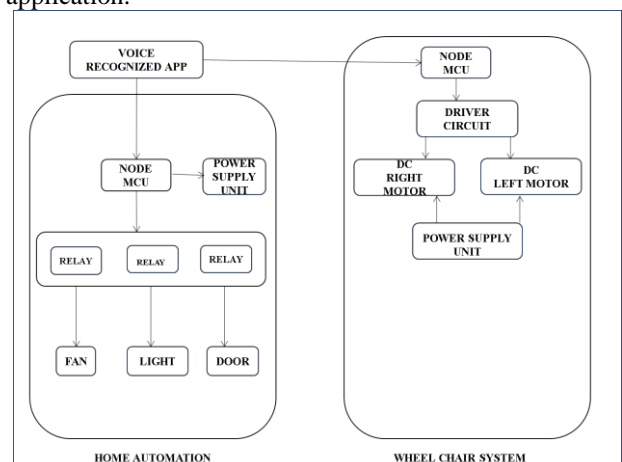

FIG 1. Block diagram of Proposed system

HARDWARE REQUIREMENTS: III. NODE MCU

NodeMCU is an open source platform based on ESP8266

which can connect objects and let data transfer using the Wi- Fi protocol. In addition, by providing some of the most important features of microcontrollers such as GPIO, PWM, ADC, and etc, it can solve many of the project's needs alone L298N Motor driver controller

IV. DC MOTOR

The 12 v dc motor connected with the driver circuit. The motors driver circuit gets the commands from the node mcu and it worked as per the given commands.

V. WHEEL CHAIR MECHANICAL STRUCTURE

The frame is the most fundamental component of a manual wheelchair, as well as the most influential in terms of performance. However, the components that are joined to the frame in order to create a functional manual wheelchair are also important. The tyres, wheels, axles, casters, leg rests, and armrests are the most important components.
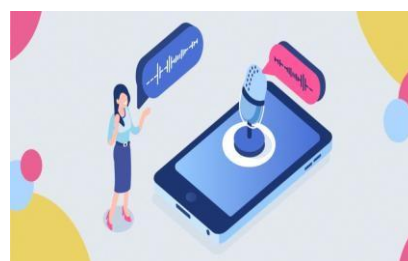
VI. VOICE RECOGNIZED MOBILE APP

Voice technology has been around for quite some time, but only recently have we seen a big advancement in this field. This type of technology uses artificial intelligence and voice recognition to allow humans to interact with machines through natural speech. Using the microphone, users can simply say what they're looking for (or even ask questions) and their input will be recognized and acted upon accordingly. In this case, our algorithm will listen to your requests and send back a list of results. Here we can developed the mobile app for listening voice commands and sends the instructions to the system which is connected via internet.

VII. IOT MODULE

NodeMCU is an open source IoT platform. It features firmware based on Express if Systems' ESP8266 Wi-Fi SoC and hardware based on the ESP-12 module. By default, the term "NodeMCU" refers to the firmware rather than the development kits. Lua scripting language used in firmware. Here which is used to receives the commands from mobile application and gives the instructions to the wheel chair motors and home automation relay circuits.

VIII. MOTOR CONTROL UNIT

The 12 v dc motor connected with the driver circuit. The motors driver circuit gets the commands from the node mcu and it worked as per the given commands.

SOFTWARE REQUIREMENTS IX. VOICE RECOGNIZED MOBILE APP

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RESULT AND CONCLUSION

In this paper, a new method approach for enhancement of voice controlled wheel chair and automation for disabled peoples. The proposed system demonstrates that the voice recognition system has a high level of accuracy. This research described a system that is controlled by voice instructions. Further developments can be made by reducing the time delay in voice mode and attaching sensors to the wheelchair to minimise collisions.

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