IOT BASED SMART WHEEL CHAIR

Gopaldatta Nayak, Madhusmita Patra, Subrat Barik
Department of Electronics and Communication Engineering,
Gandhi Institute For Technology(GIFT), Bhubaneswar.
Saumendra Behera,Asso.Prof, Department of Electronics and Communication Engineering,
Gandhi Institute For Technology(GIFT), Bhubaneswar.
Affiliated to All India Council for Technical Education (AICTE)

ABSTRACT

Our project is specifically related to the IOT handling the wheel chair system. The wheelchair System is recommended to control a wheel chair by using the internet. The objective of this project is to facilitate the movement of disable people or handicapped and also the senior people who are not able to move well. The result of this design will allow the special people to live a life with less dependence on others. IOT technology is a key which may provide a new approach of human interaction with machines or tools. Thus, their problem can be solved by using IOT to control the movement of a wheelchair. Smart Wheelchair is known as a Power Wheelchair that is integrated into multiple sensors, assistive technology, and computers that give the user with a disability such as impairment, handicaps, and permanent injury, the required mobility to move freely and safely.

INTRODUCTION

In this project we are using IOT, but many of individuals with   disabilities who need wheelchairs are satisfied with it, few members of the disabled community find it is difficult for handling a standard power wheelchair. This project is been designed for handicapped and depended disable it is more independent, productive and enjoyable living. To perform functions a handicapped person with locomotive disabilities needs a wheelchair that require him or her to perform movements He/she needs to move the wheelchair manually by pushing the wheelchair.
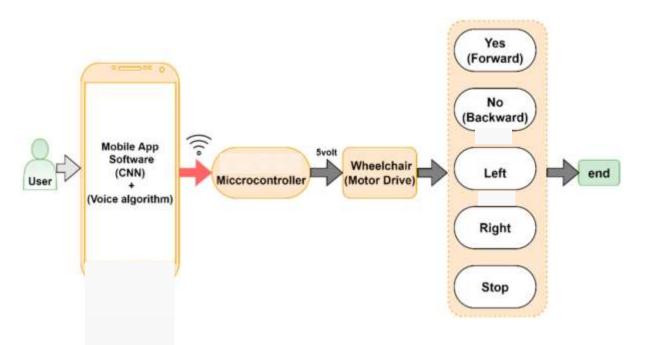
RELATED WORK

Several studies have concluded that the independent mobility or movement which is included powered wheel chair, manual wheelchair and walker access the benefit to all the disabled human beings. Independent mobility increases vocational and educational opportunities, reduces dependence on other members, and promotes feelings of self-reliance and in dependability. The lack of exploration and control often results into a cycle of deprivation. For aged people, independent movement is an important aspect of self-esteem and plays a vital role in "aging in place." Mobility difficulties led to the problem of activities of daily living (ADL). The disabled population includes people with low vision, visual field reduction, spasticity, tremors, or cognitive deficits. Which have been designed in different ways, such as assuring collision free travel, aiding the performance of specific tasks (e.g., passing through rooms), and independently transporting the user between locations. The use of this new technology in associated with a mechanical system in order to make everyone's

life simple and independent which would spark interest in the developing modern society.

PROPOSED MODEL

The main aim of this project is to facilitate and increase the ability of disable people who cannot function or move well. Using this wheel chair will allow handicapped people to move freely and independently without depending on others for their movements a daily routine. This can be realized and optimized with use the smart phone device as an intermediary or interface. This project uses Microcontroller circuit and DC motors to create the movement of wheel chair. As the deficiency and weakness in joints, they have an inconceivable danger of tumbling or much worse hurting them. By and by it's fundamental to identify whether a development individual has fallen with the objective that he/she can profit by outside intercession on schedule.

Fig.1: Block Diagram of IOT based Wheelchair.

1. WORKING OF PROPOSED MODEL

This project will provide disability weight innovative solutions to handle the wheel chairs to use android app. This project describes a wheelchair which can be controlled only by using the internet. The main focus of this project is to simplify the movement of the disabled people and old or young people who cannot move properly so with this we can facility them to lead them live freely without any problem. The Five operations perform by the wheelchair are described as following:

1) Moving forward

2) Moving backward

3) Turning to the right

4) Turning to the left

5) Stop condition

2. COMPONENTS REQUIRED

2.1   Wheelchair battery:

The battery is used in this work is wet type. To create electrical energy, we required chemical reaction between lead and sulphuric acid which use wet batteries. It has higher maintenance rate but are lighter than AGM (Absorbed Glass Mat) or Gel batteries.

Fig.2: Battery.

2.2   Wheels: Wheelchair has two rear wheels. Universal wheel is fixated in wheelchair base in front both wheels have the same diameter. The instructions are passed through micro-controller to the motor, the wheels rotated in the specific direction.

2.3   Motors: Motors are ar   st important parts of a mobile robotics platform. There are various shape and size of motors Figure shows the 12V DC motor use in wheelchair. The 12VDC motor is connected to the wheels and driver of the microcontroller. One Motor Driver is sufficient to control two motors simultaneously.

Fig.4: Motor.

2.4 Motor Driver: It is an interface between the DC motor and the microcontroller. The commands are processed further to NodeMCU towards driver and executed by DC motor to rotate the wheels in specific direction or to stop.

Fig.5: Motor Driver

2.5 Microcontroller : Microcontroller is used to command the motor driver.

Fig.6: NodeMCU

3. ADVANTAGES

This project describes ⟨...⟩viding GUI for a wheelchair which is based on IOT. Scope of ⟨...⟩

- Helps to imple⟨...⟩le and aged people who can't move properly.

- Less Complexity and Hardware to mount.

- Can be mounted on the existing wheelchair.

- Wireless control helps to monitor the wheelchair.

- Reduces manpower and dependency on other human drive.

- Wheelchair is compact and economical.

- It provides smooth movement for physically challenged people.

- Low power consuming and easy to operate the wheelchair.

4. LIMITATIOINS

- It required internet for operation over which the main system is dependent.
- Battery recharging is needed so motor have to periodically recharge and maintained.
- Only internet user can operate, it will not support any other operating system.

5.RESULT

It is a overall implementation of hardware system. The main components are Microcontroller, L293D Motor Drivers, wheels, Universal wheel, sensors, alarm etc. there are particular devices used for interfacing every device with each other perfectly. So that the wheels of the chair move as per the user's requirement.

6.CONCLUSIONS

By using an internet, we have successfully designed and implemented a motorized wheelchair. For most of the commands.This project will help all the disable people who are dependent on wheelchair for their mobility.All the common man can reach out for this smart wheelchair to become independent for mobility if they hold a smart phone.

7. FUTURE SCOPE

In future, voice recognition module can used to develop the voice recognition system. Voice recognition issues a command to control the movement of wheelchair. For movement of wheelchair Microcontroller and DC motor circuit were built. For not to occur disorder during recognize the user voice, this system works in a quiet environment. Furthermore, the pronunciations accuracy must be ensured and the word-related (voice) the users voice must clear in short distance on microphone was essential in this innovation.

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