iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 8 **Issue:** VI **Month of publication:** June 2020

DOI: http://doi.org/10.22214/ijraset.2020.6090

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 8 Issue VI June 2020- Available at www.ijraset.com

Voice Controlled Smart Wheel Chair

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Abstract: ***The disabled people cannot move from one location to another location. They always need help for moving wheel chair. The voice controlled system provide more help independently. We describes in this paper about intelligent smart voice controlled wheel chair which operates on disabled voice commands. This system can be controlled by the simple voice commands given by the disabled people.***
This voice controlled system make them move independent. Joystick interface Powered wheelchairs are unable to be controlled by many people. All the physical disabled person can control the wheel chair easily. Who cannot control their movements especially with the help of hands.
Some patients like cerebral palsy, quadriplegic, and multiple sclerosis are dependent on other people to move from one place to another place and due to this they don't have the freedom of mobility. This voice controlled wheelchair helps them to drive the wheelchair without anyone's help.
Depending upon the direction specified in the commands, the Arduino nano will drive the motors. The speech recognition is recognized by Google voice service .The bluetooth is connected with Arduino nano which helps for the movement off wheels to which the DC motor is fixed. The wheelchair would operate by disabled people.
Keywords: Arduino Nano, Blue Tooth, Android Phone, Dc Motor.

I. INTRODUCTION

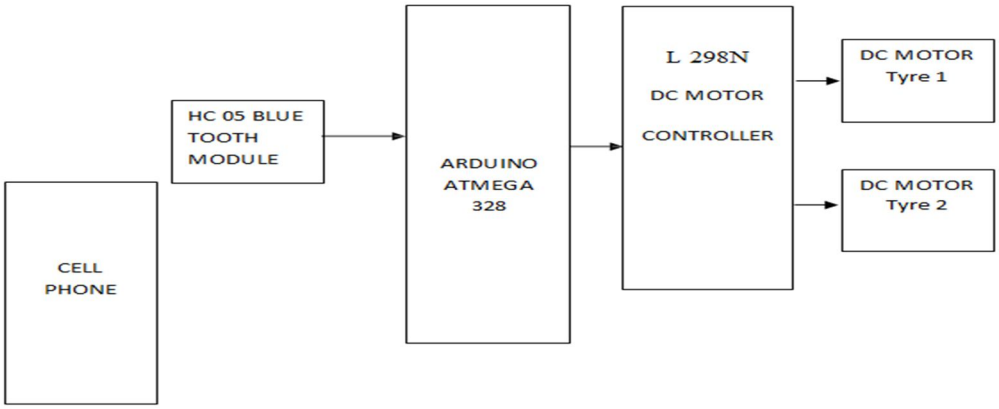
Intelligent smart wheelchair is going to be played a crucial role within the future welfare organization. The employment smart intelligent wheelchair encourages the view of the machine as a partner instead of as a tool. The population of individuals with disabilities has risen markedly during the past century.
The National Health Interview Survey (NHIS), two distinct trends have contributed to the increasing overall prevalence of disability: a gradual rise, due largely to demographic shifts related to an aging population, moreover as a rapid increase that's because of health impairments and accidents.
Many individuals have problems to use a standard wheelchair. A recent clinical survey indicated that 9%- 10% of patients who received power wheelchair training found it extremely difficult or impossible to use it for his or her activities of daily living, and 35% of patients found the steering and maneuvering tasks difficult or impossible. These people, littered with motor deficits, disorientation, amnesia, or cognitive deficits, are dependent upon others to push them, so often feel powerless and out of control. Intelligent wheelchair has the potential to supply these people with effective ways to alleviate the impact of their limitations, by compensating for his or her specific impairments.
Robotic wheelchairs may help in manufacturing a wheelchair and planning motion. Recently, research of assistant robots is additionally emerging field of robotic applications. We are making a speech recognition based wheel chair for patients. Patients who cannot walk and need to use a wheel chair can operate the wheel chair by their voice. People with disabilities will be satisfied and fulfilled with power wheelchairs; some members of the disabled community find it hard or impossible to use a customary power wheelchair. This project might be a part of an assistive technology. It's for more independent, productive and enjoyable living.

II. PROPOSED SYSTEM

In earlier proposed system the power wheelchair which didn't help the disabled person to move from one place to other place independently, we have seen about Joystick controlled wheelchair which can't be used by a person with arm impairment and the disabled persons would feel difficult to use it was not so user friendly and the Iris controlled wheelchair which helped them to move independently but due to its high cost it was not affordable by all the disabled persons.
We have proposed a model voice controlled smart wheelchair which helps the disabled person to overcome the difficulties faced by earlier proposed system.
In this system whim helps the person to move independently from one place to another by simple voice command and this model is easy to use by the disabled person.

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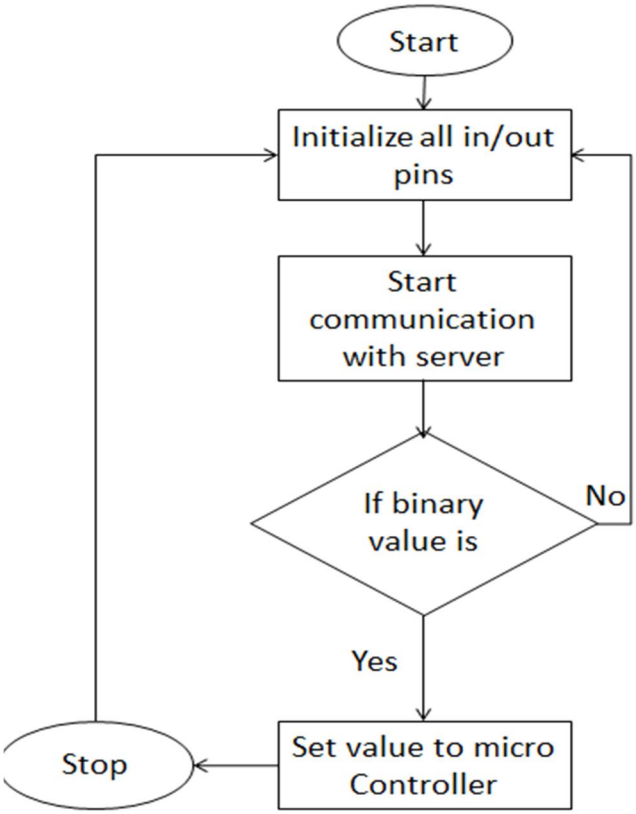
A. Block Diagram



In our project, voice recognition system is used as user interface. The block diagram of the intelligent wheelchair with motor drive and control system

B. Flow chart

This proposed system works on voice commands given by the wheelchair user. The system is fully independent as the user does not need any other person to help him/her to move the wheelchair. There are basically five commands, which command is given to the wheelchair. It has arduino nano, bluetooth hc05; motor driver and geared motor are used in this project. The user first pairs his/her cell phone to the device through bluetooth. Later, the voice recognition system through the Google reads the voice and processes it by using arduino coding. After the processing of arduino coding, we get a command which is matched with particular commands we have set for our system. After the matching of command the control is passed to the microcontroller. The micro controller helps the system to drive the wheelchair with the help of the drivers and motors.



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III.RESULTS

This proposed system helps for the independent movement of a disabled and old people. This project named "Voice controlled smart wheelchair" provides the independent movement for disabled people through voice commands. The technique we used is, first we pair up our android cell phone to the device through bluetooth module. The user later gives voice commands which are converted to text through Google assistant. The text command is matched with one of the command which is already written in the arduino coding. After matching, the control is passed to the microcontroller to perform the required action. Overall, the project gives an idea to develop a system which can be helpful for disabled and old people.

IV.CONCLUSIONS

This project elaborates the design and construction of Voice controlled smart Wheelchair with the help of Bluetooth Module. The circuit works properly according to the command given by the user. This project, this enables physically disabled to control their wheel using an android application in their smartphones and it has also been tested and validated. The detection of any obstacle is controlled by the micro-controller. As soon as the person switches on the circuit and starts moving, any obstacle which is expected to lie within a range of 3.5 meters will be detected by the Ultrasonic sensor. This system contributes to the self-dependency of disabled and older people.

V. ACKNOWLEDGMENT

Salutations to our beloved and highly esteemed institute, "Ballari Institute of Technology & Management" for having well qualified staff and labs furnished with necessary equipment.

I express my sincere thanks to my guide Dr.Aradhana. D for giving me constant encouragement, support and valuable guidance throughout the course of the project, without whose stable guidance this project would not have been achieved and I would thank our project coordinators Mr. Jagadish R M and Mr. Azhar Biag.

I express wholehearted gratitude to Dr. R.N. KULKARNI who is our respectable HOD of Computer Science Dept. I wish to acknowledge his help who made our task easy by providing with his valuable help and encouragement.

And also my due thanks to Dr. V.C.PATIL, the principal, as I consider myself very lucky to have such excellent computing facilities and their inspiration throughout our professional course.

I also thank the non-teaching staff of CS department who guided at the time of difficulties

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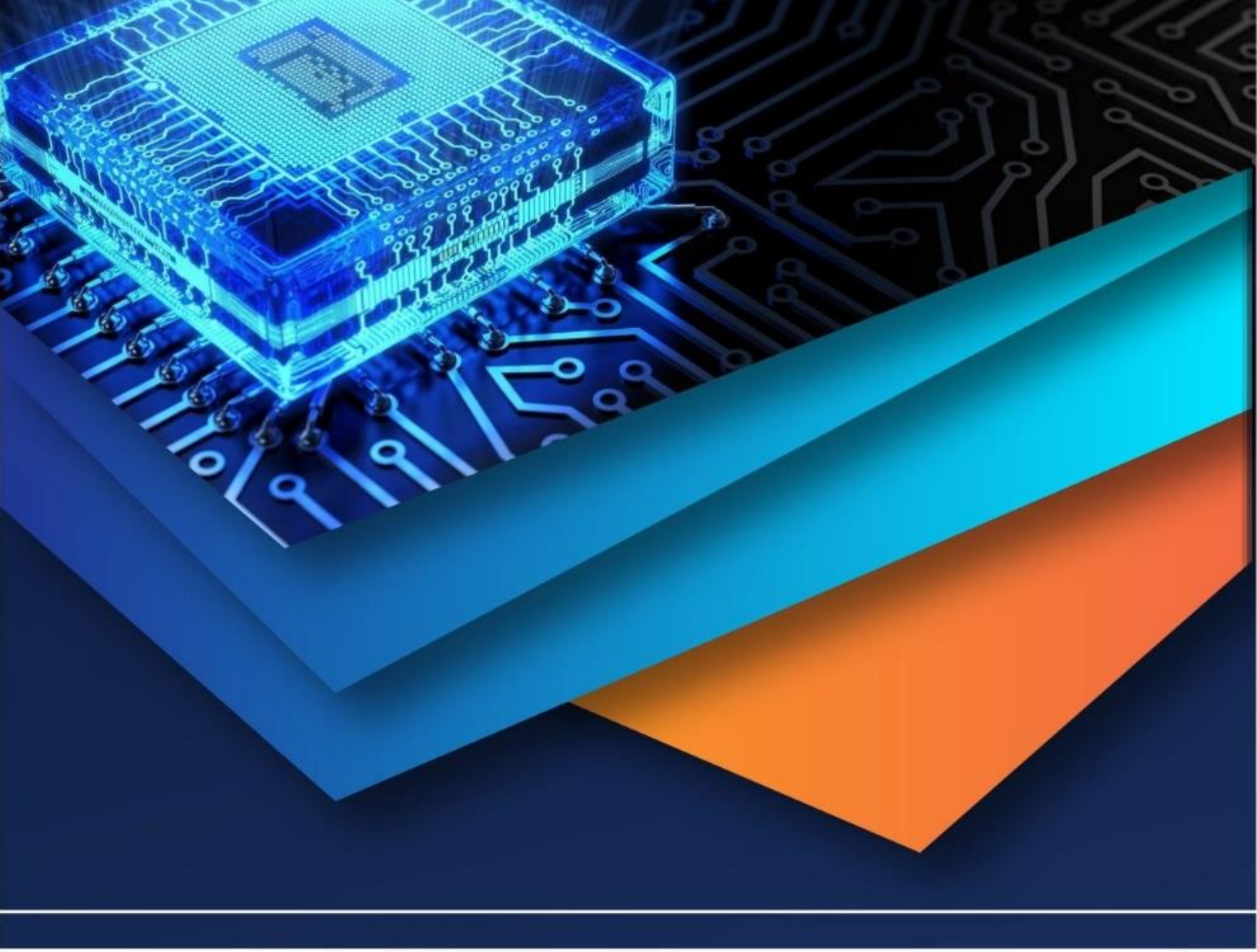
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