Android Phone Controlled Voice, Gesture and Touch Screen Operated Smart Wheelchair

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ABSTRACT: This paper is related to the android-based wheelchair controller. The system is designed to control a wheelchair by using an android device. 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. Android 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 android technology to control the movement of a wheelchair. In this project, Basic4android interface is designed to program the android device that will be able to control the movement of wheelchair. This project integrated circuit board and direct current motor to create the movement of wheelchair. The results of this project paper showed that it can be used for future research works and to design excellence innovation that meets market need and public interest.

KEYWORDS: AT89S52 8-bit microcontroller,MAX232-RS232 Level controller,USARTinterface,Bluetooth,H-BRIDGE DRIVER(L293D),DC MOTOR,RPS.

I.INTRODUCTION

The number of people, who need to move around with the help of some artificial means, whether through an illness or an accident, is continually increasing. These means have to be increasingly sophisticated, taking advantage of technological evolution, in order to increase the quality of life for these people and facilitate their integration into the working world. In this way a contribution may be made to facilitating movement and to making this increasingly simple and vigorous, so that it becomes similar to that of people who do not suffer deficiencies. Systems already exist which respond to many of the needs of people with different degrees of incapacity (Leifer, 1981; Borenstein&Koren, 1985; Madarasz, 1986; Jin et al., 1993). However, there are still important advances to be made in this field. This justifies the numerous research programmes which are being carried out at the present time; the TIM MAN project (Miller & Grant, 1994; Grant, 1994), the COACH project (Gelin et al., 1993) and the SKIL guide system (Sabbe, 1993). While the needs of many individuals with disabilities can be satisfied with power wheelchairs, some members of the disabled community find it is difficult or impossible to operate a standard power wheelchair. This project could be part of an assistive technology. It is for more independent, productive and enjoyable living. Android-based wheelchair controller is a system where the DC motor is used to move the wheelchair. Nowadays, handicapped people face problem to control wheelchair by themselves. Sometimes they need other people to help them. This project will provide a new way to control the movement of wheelchair such as turn direction to left, right, forward and reverse direction. The overall wheelchair operation uses DC motor and motor driver module combines with microcontroller system for instance controlling board. Android-based wheelchair controller that consists of android device and a control box that can be attached to standard wheelchairs to control the movement by using a DC motor. Bluetooth communication protocol is used to communicate sensory and command information between the android device and the control box .There are 4 options for basic motions of a wheelchair to be applied by the user. The four conditions of the wheelchair can be described as the following:
a. Moving forward
b. Moving backward
c. Turning to the right and left

II.LITERATURE REVIEW

Many people those using wheelchairs are not able to control an electronic wheelchair with joystick interface. The "**iWheel**" robotic wheelchair system is a general purpose navigational assistant in environments that are accessible for the disabled (e.g., ramps and doorways of sufficient width to allow a wheelchair to pass). A reactive system does not use maps for navigation. One of the advantages of this strategy is that users can navigate in multiple locations and environments. This report describes indoor navigation in the "**iWheel**" system; outdoor navigation is currently under development.

III.METHODS AND MATERIALS

This system is related to the android-based wheelchair controller. The system is designed to control a wheelchair by using an android device. 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. Android 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 android technology to control the movement of a wheelchair. In this project Basic4android interface is designed to program the android device that will be able to control the movement of wheelchair. This project integrated IOIO board and direct current motor to createthe movement of wheelchair. The results of this project showed that this project can be used for future research works.
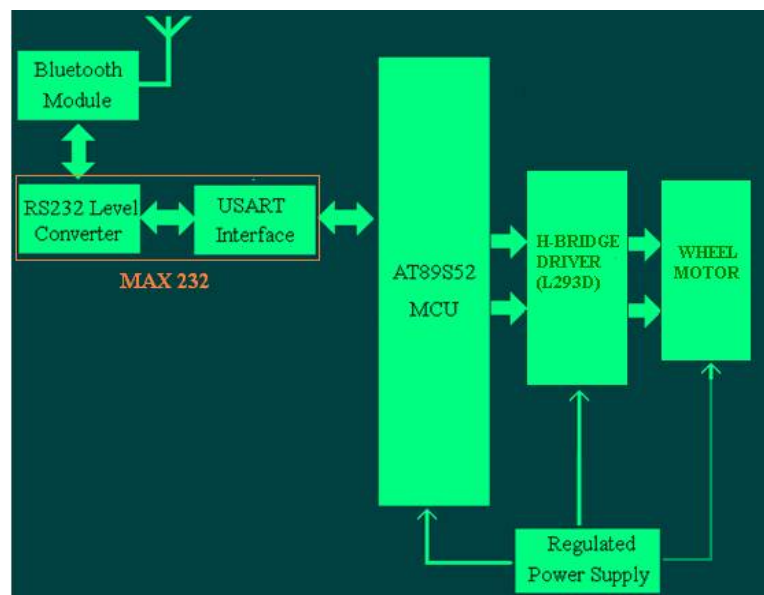

Fig:1.1 Functional block diagram of Smart wheel chair.

IV.RESULTS & DISCUSSION

Finally all the combination circuits and the DC scooter motor were embedded to the wheelchair. This project gives an idea on how to combine all the circuit board, DC scooter motor, and electronics components together in one whole system. As a future improvement, replacement of the DC scooter motor with the DC motor with geared is recommended.

V.CONCLUSION

As a conclusion, the objectives of this project have been achieved successfully where this project was able to develop an android system that can control the movement of the wheelchair and to develop an android system that can control two appliances with the android phone. The development of an android-based wheelchair controller was fully functional base on the objective which are targeted before started this project.

REFERENCES

[1] Samarjeet ,PrithvirajChavan ,VivekPDeodeshmukh ,"iwheel robotic wheelchair system" Electronics and Telecommunication Department, D.J. Sanghvi College Of Engineering , Mumbai, India.
[2] ArchanaHule, Rekha Bandage, Pratik Shah,"A wheelchair monitored with the android mobile application"Rashmi MahajanStudent, ENTC, Dr D.Y.Patil School Of Engineering, Maharashtra, India
[3] Ambarish D. Pundlik, Anant.S. Bhide ,"wheelchair which works on the inputs such as gesture and voice commands via android phone and navigates according to command" PG Student, Dept. of Electronics & Communication, Shri SantGadge Baba College of Engineering & Technology, Gujarat, India.