Scope International Journal of Science, Humanities, Management and Technology (SIJSHMT)

ISSN : 2455-068X (www.sijshmt.com)

Vol. 1, Issue 2, pp. 8 - 12, October, 2015 – January2016 (Quarterly)

ANDROID BASED WHEELCHAIR USING TOUCH SCREEN

P.Mahalakshmi Asst.Prof/EEE
Ganadipathy Tulsi's Jain Engineering college, Vellore, India

R.Geetha Associate Prof/EEE
Ganadipathy Tulsi's Jain Engineering college, Vellore, India

Accepted on 5th November, 2015

ABSTRACT

We are living in a modern world where we totally dependent on embedded technology and based product. It also used in medical science for transporting a person from one place to another. It is been reduced from complicated system to easily useable system. This system is further reduced to a simple system by including communication between bluetooth module(Hc-o5) and microcontroller (Arduino) based on android application software. combination of this function make the movement of wheelchair easily controlled . When we want to change the direction, the touch screen sensor is module to direct the user to required destination using direction keys on the screen and that values are given to microcontroller.PWM technique quickly switch on and off the motor supply. The methodology adopted is based on grouping a microcontroller with touch screen.

KEYWORDS: Wheelchair, gesture, physically challenged, android

INTRODUCTION

Physically disabled people increase day by day nearly every one person in fifty is suffering from paralysis due to damaging of nervous system. The causes of paralysis are mainly due to spinal cord injury, strokes and cerebral palsy. Disabled people often find them self in a difficult situation like transporting from one place to another, we can provide a good technology providing them android based wheelchair. It can be operated from a limited distance through bluetooth module. The difference between this technology and previous technology is simple and intractive system with less monitor and joystick.

BLOCK DIAGRAM:

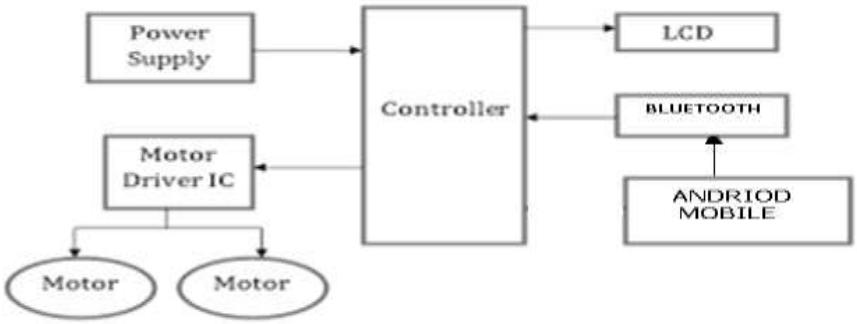


Fig-1 Block diagram

WORKING:

In this system there is input device, touch screen. In order to select a specific input device we are using a switch that is when the switch=1 voice recognition system is considered and when switch=0 touch screen is considered. The output of the touch screen is analog in nature, to digitize these signals we are using in-built six channel ADC of ATMEGA32 micro controller. On receiving the Signal the microcontroller directs the motors through the control circuit. In this, two DC brushless motors are used for controlling the the two wheels of the chair independently. The different directions of motions possible are:

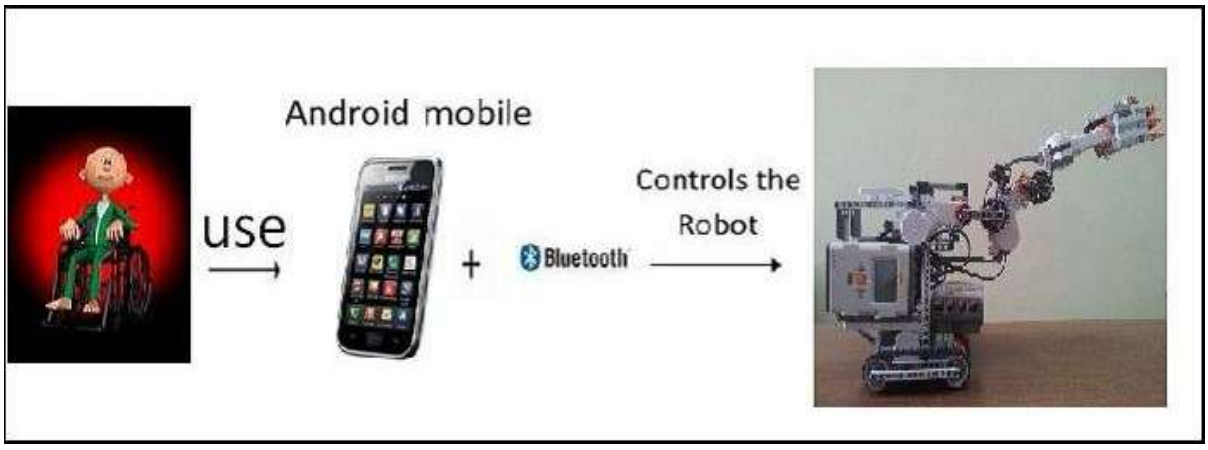


Fig-2 Directions of Motions

Forward: Both the motors in the forward direction.

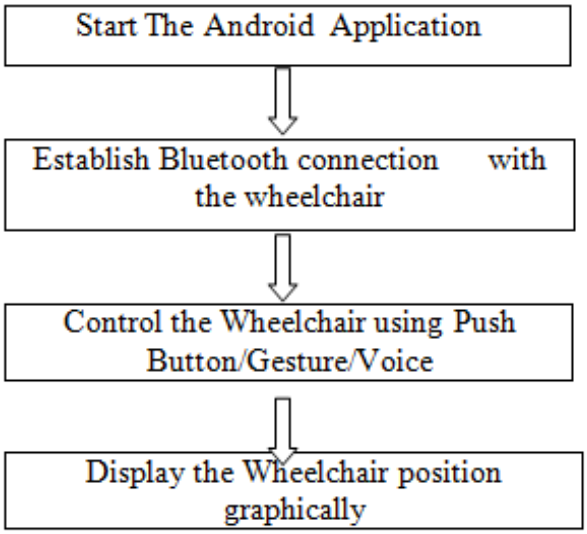
Backward: Both the motors in the reverse direction.

Left: Left motor stopped/Right motor in the forward direction.

Right: Right motor stopped/Left motor in the forward direction.

The code is written in arduino such that the speed of the motors is controlled by using PWM output pins of arduino. The motors are controlled with four different speed levels that is with 100% duty cycle, 75% duty cycle, 50%duty cycle,25% duty cycle.

FLOWCHART



ALGORITHM

- When the application is opened at that time a request is generated if the Bluetooth is not turned on.
- A connect virtual button is present which is used to connect the Android mobile phone with the hardware Bluetooth HC-05 for wireless transmission of data.
- When the Bluetooth is switched on the application scans the input when the user touches the virtual button.

- If the requirement is forward then all the dc motors are supplied with 5V and moved in forward directions for linear movement.
- If the requirement is reverse then all the dc motors are supplied with 5V and moved in backward directions for linear movement.

- If the requirement is to turn left then the left dc motors are stopped and the right dc motors are supplied with 5V and the wheelchair moves in left direction.

- If the requirement is to turn right then the right dc motors are stopped and the left dc motors are supplied with 5V and the wheelchair moves in right direction.

- If the stop virtual button is touched then all the dc motors are stopped.

- A help virtual button is also present in order to send an SOS message to the concern person in case of any help.
- When the person reaches his/her destination at that time the disconnect virtual button needs to be touched so that the wireless connection is turned off.

MERITS OF ANDRIOD BASED WHEELCHAIR

- Easy to drive with negligible efforts.

- Less complexity and less hardware to mount.

- Can be mounted on the existing wheelchair.

- Wireless control helps to monitor the wheelchair easily.

- Reduces manpower and dependency on other human drive.

- Wheelchair is compact and economical.

- Android application can scan the valid input at a faster rate and hence control the movement of wheelchair.

- Provides easy movement for physically challenged people.

- Easy to develop an existing wheelchair and does not require any sophisticated components.

- Low power consuming and easy to operate the wheelchair.

CONCLUSION

The project implementation will help all the people who are dependent on wheelchair for their mobility. All common man can reach out for this wheelchair to become independent if they hold a smart phone. The application built can be useful for many android phones. Wheelchair is simple to operate and does not need any external help

REFERENCE

1. Intelligent Gesture Controlled Wireless Wheelchair For The Physically Handicapped '1shreedeep Gangopadhyay, 2somsubhra Mukherjee & 3soumya Chatterjee, 15th September 2013, Pune, India, ISBN: 978-93-82702-29-0

2. Sudheer kanuri, T V Janardhana Rao, Ch Sridevi and M S Madhan Mohan,"Voice and Gesture Based Electric-Powered Wheelchair Using ARM", IJRCCT, Vol 1, Issue 6, November 2012

3. Rajesh Kannan Megalingam, Sai Manoj Prakhya, Ramesh Nammily Nair and Mithun Mohan, "Unconventional Indoor Navigation: Gesture Based Wheelchair Control", 2011 International Conference on Indoor Positioning and Indoor Navigation (IPIN), Available http://ipin2011.dsi.uminho.pt/PDFs/Shortpaper/101_Short_Pa per.pdf

4. R. Lockton and A.W. Fitzgibbon, "Real-time gesture recognition using deterministic boosting", Proceedings of British Machine Visio Conference (2002).