

## **Gesture Controlled Smart Wheelchair**

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### **Abstract**

The main objective of the system is to design a microcontroller based wheelchair system and to:

1. To modify manual wheelchair into electric wheelchair by fixing dc motors to the simple wheelchair with the help of chain drive mechanism
2. To direct the movement of wheelchair only by tilting the hand or head in forward, reverse, left and right direction.
3. To reduces battery size.

This project aims at helping the human kind especially those who are paralyzed from the waist down due to spinal cord injury which is also called as paraplegia. This wheelchair helps patient to become self-sufficient also it gives better stability and comfort compared to manual wheelchair and the power wheelchair with joystick.

Keyword: microcontroller, wheelchair, paralyzed.

### **Introduction**

It is accepted that man's soonest creations were seat on the wheel route in 4000 B.C [2]. The primary record of wheeled furniture was an engraving found on a stone state in china what's more, a Childs bed portrayed in frieze on a Greek container, both going back to the sixth century B.C.E. Chinese utilized their designed push cart to move individuals just as substantial items [1] [3]. In an around 1553, confirmations are discovered that Greek and Roman doctors a transportation for the wiped out or impaired [4].

To get individuals out in outside air, and help work with whatever they could do in this field. After that numerous enhancements in structure of wheelchair were taking place [5]. In 1665 paraplegic watchmaker, Stephen Farflar assembled his very own seat which was self-moved seat [6]-[8]. There were issue like solace of patient seating on the wheelchair, need to get wheelchair into vehicle, light weight wheelchair were testing up. Because of progression in programmed innovation, there issues were genuinely settled.

Today because of headway in medicinal administrations and request of autonomy of debilitated individuals light weight, flexible and manual just as power wheelchair are being planned.

Thus, there is a need to develop a a microcontroller based wheelchair system that Modify manual wheelchair into electric wheelchair by fixing dc motors to the simple wheelchair with the help of chain drive mechanism.

## Working

The simple info is given by the accelerometer utilizing hand motions. This is given to PORT A of the microcontroller for example PORT An of ATMEGA 32. PORT A will change over simple voltage into advanced voltage.If accelerometer is pushed ahead, wheelchair will push ahead, etc. Speed and bearing control is finished by utilizing two brushless DC engines. Left engine is associated with left chain drive and Right engine is associated with right chain drive. Engines are run utilizing 12V, 32Ah batteries.

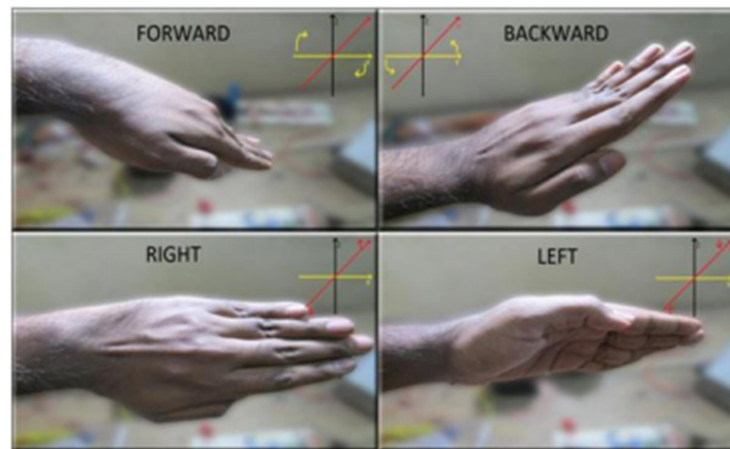


Fig1: Different hand gestures for input

## Result

The undertaking targets controlling a wheelchair by methods for hand gestures. If accelerometer is tilted to left side, wheelchair will move left. Same conditions are connected for forward, turn around, right tasks.



Fig2. Smart wheel chair

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