Hand Gesture Controlled Electrical Wheelchair

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Abstract- A wheelchair is not the same functionality for a person with disabilities. In our project, we have designed a programmable automatic wheelchair. In our project, we have connected a DC motor to a common wheel of a wheel chair. The motor is connected to the wheel of the wheel chair by means of a chain and a 12 volt DC supply is given to the motor. Controllers are attached to turn the motor on and off, this wheelchair allows physically challenged people to move from one position to another. A physically challenged person needs the support of another person to operate a normal wheelchair. The core of our project is a self-propelled wheel chair for the physically challenged that moves with arm movements and head movements. This wheel chair is operated with the help of hand gestures so that a physically challenged person can easily operate Wheel Chair This wheelchair is operated by hand movements. If we move the arm in forward backward direction then the wheel chair will move

forward and backward. To make the wheel rotate in 360 degrees, forward, backward, right, left, and stop, induction is given. To decode this induction, Arduino uno is used. The Arduino uno is given a 12V DC supply and a DC motor is connected to it. This paper proposes a novel approach to provide intelligence to a low-cost smart wheelchair based on a wheel chair embedded system. Sensors give the wheelchair the power to sense and the scientific inference in the microcontroller gives the wheelchair the intelligent power to make and execute decisions. This wheel chair is partially made so that a physically challenged person can buy it at a low cost.

Keywords: Medical devices, Motion recognition, Inertial sensors, Wheelchair,
Quadriplegia, Novel algorithm.
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I. INTRODUCTION

This wheelchair is specially designed for patients who cannot move their limbs without their head. A wheelchair is a mode of mobility that makes it easier for the disabled to move around. To move it, either the handle or the wheels must be turned. Electric motors, batteries, controllers, are examples of electrical wheelchairs or power wheelchairs. Around the world, accidents, wars, and spinal cord injuries have resulted in countless individuals losing their limbs. These people have to rely on the help of a wheelchair. We have made this wheel chair for such people. Wheel chair, DC motor, DC battery, charger, connecting wire, micro controllers, byke chain pocket, hand gesture controller, this component are used in this wheel chair.

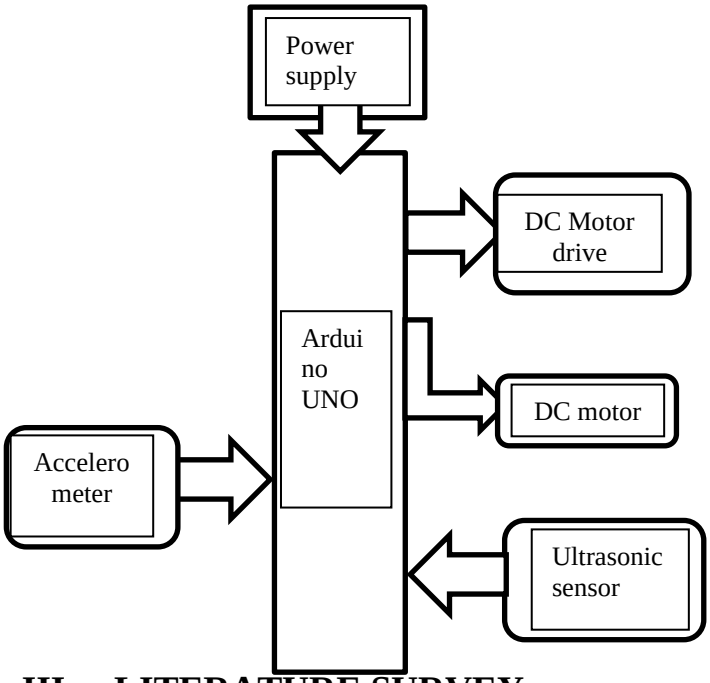
In this wheel chair, the motor will be connected to the chuck of the wheel chair with the help of a chain pocket. After programming in Arduino uno the motor is connected to the output site of the micro controller the micro controller is supplied with 12v dc from the battery and the hand gauge controller is connected to the Arduino via a wireless system.

So that this wheel chair can be driven by disabled people based on their hand and head movements, this wheel chair will also be able to be driven by humans.

This wheel chair does not require a second person to operate it, this wheel chair can easily transport a disabled person from one place to another.

While controlling the wheelchair, turning left and right is easily controlled by head movement, depending on the user, the wheelchair will automatically stop near any obstacle. This method of controlling the wheel chair can be easily handled by a disabled person

II. CIRCUIT DIAGRAM



III. LITERATURE SURVEY

The aim of this hand gesture and head movement controlled electric wheelchair project is to enable the disabled person to move from one place to another easily with the help of a wheelchair. A typical powered wheelchair uses sensors to learn left and right signals, a speech interface to interpret commands, a wireless device to determine room-level positioning, and motor-control software to affect the wheelchair's movement. Are This wheelchair learns the layout of its environment through a perceived, guided tour given by the user or the user's caregivers. Then, the wheelchair can move to any previously named location under hand gesture and head motion commands.

IV. CONCLUSION

The commands from the hand gesture to the microcontroller are then sent to the H-Bridge to drive the motor. The commands in the micro-controller are processed according to our designed control algorithm. After that the motor starts and the wheel chair runs

The wheelchair is fully capable of carrying a load of up to 110Kg and moving according to the gestures given by the person using the wheelchair. This wheel chair can be easily used by disabled people

V. REFERENCES

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