The Circuit Breakers

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A gesture controlled wheelchair

(Aid to physically disabled people by incorporating manual operation)

PROBLEM :
Today in India, many people are suffering from disability, there are people whose lower half of the body is paralysed. In India, around 5436604 population is affected from movement disability. The wheelchairs available today in market are less convenient and manually operated. The disabled person has to move the chair manually with his hands,. And some motorized wheelchairs available are less convenient because the controller of it is attached on its arm rest, so the user cannot use it remotely and need others help to sit on it.

SOLUTION :
The best solution proposed is - GESTURE CONTROLLED WHEELCHAIR
The wheelchair is capable of carrying the load up to 150 kg, and moving in accordance with the gesture given by the person using the wheelchair. The chair can be controlled by the owner even if he/she isn't sitting on the chair with the help of gesture controlled wireless glove. User can simulate the wheelchair towards them and then can sit on that wheelchair by themself without the need of another person, with this feature they can feel more independent and self sufficient.

Microprocessors and Other components used

1. ARDUINO NANO - 2*900
2. DC Motors - 2*100
3. Jumper wires - 150
4. Battery - 500
5. Battery Charger - 400
6. Resistors
7. LED
8. Buzzer
9. Pushbutton
10. nRF24L01+ - 2*700
11. Motor drivers - 2*250
12. Adxl345 - 300
13. Atmega - 180
14. Wheels - 300

Total = Rs. 5730/-

Execution :

Firstly we will make the wheelchair from the raw material in our central workshop. Then program the arduino accordingly. We will use nRF24L01 transceiver to operate the glove wirelessly. Two arduinos are required, one to send the signal and other to receive it. We will use motor driver to control the direction and speed of DC motor. ADXL345 (accelerometer) will be installed in the glove to sense the gestures made by user's hand movement.

Here, the accelerometer will send signal accordingly to transmitter after sensing the gestures. The arduino attached to the glove will conduct the whole sensing and transmitting the signal.

The other arduino on the wheelchair will receive the signal through the receiver and will send it to the motor driver which will control the motor accordingly. And that's how we will control our wheelchair with gesture.

Deadlines :

Week 1: Purchase

Week 2: Chair

Week 3: Chair

Week 4: Arduino programming

Week 5: Assembling

Week 6: Final checking