Finger Controlled Wheel chair

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Project Aim

To build a Wheel Chair controlled by Hand fingers

Project description:

Generally Old and Physically Handy-capped people face trouble in moving from one place to another place. Though they use supporting stick or wheelchair, they need to give some force to move the chair or they need someone to move the chair. Through this project, you are going to create a unique wheelchair which can be controlled with the finger movements.

Hardware Used:

- **Arduino/Genuino Uno:** The digital and analog input/output pins equipped in this board can be interfaced to various expansion boards and other circuits. Serial communication interface is a feature in this board, including USB which will be used to load the programs from computer.

- **Flex Sensors:** Flex sensors are passive resistive devices that can be used to detect bending or flexing. Flex sensors are resistors that can be used to detect bending. A bi-directional flex sensor decreases its resistance in proportion to the amount it is bent in either direction.

- **DC motors:** These motors works with DC power as name indicates itself. So these motors will convert the DC Electric power in Rotating Mechanical Power.

- **Motor Driver:** Generally the Arduino board is not capable of providing the required amount of current for running the motors. So we use a device called Motor Driver which will provide sufficient current for driving the motors.

Software Used:

- **Arduino IDE:** You will be needing Arduino IDE software to write and upload the programming logic onto the Arduino Uno board

- **Thingspeak:** Also, you need to create an account in the ThinkSpeak IoT platform to integrate the system onto the cloud and store the data online

Approach

1. Prepare four Flex sensors for four directions

2. Attach those Flex sensors to glove and wear the glove in such a way that one finger bending should bend one flex sensor

3. Interface the Flex sensors and DC motors with the Arduino board

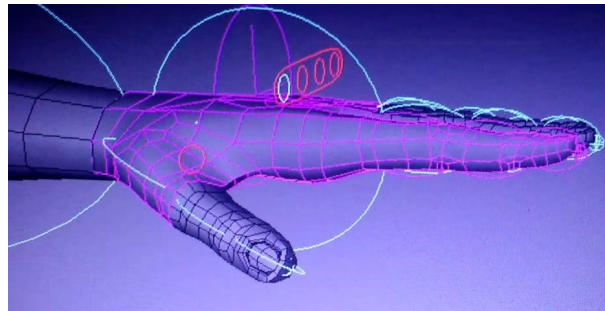4. Upload the code

5. Test the chair by bending your fingers

Figure 1: 3D simulation