

Advanced and Intelligent wheel chair control system for leg amputees using Joystick

The main aim of this project is to design a wheel chair for physically challenged people to help mainly for the leg amputees. As this project uses the joystick technology, for controlling the directions of the wheel chair, which consumes less power by the user to operate it so that even the patient can operate without any stress. Wheel chair movement can be controlled in Forward, Reverse, Left and Right direction. The system also uses IR obstacle sensor for detection of obstacle in its way and alerts through buzzer alarm system when the obstacle is being detected.

Automation is the most frequently spelled term in the field of electronics. The hunger for automation brought many revolutions in the existing technologies. One among the technologies, which had greater developments, is the controlling based on joystick module. These had greater importance than any other technologies due its user-friendly nature. Joystick is a simple device with four direction movement. It can be made to produce an analog voltage which is processed by the microcontroller to produce the corresponding digital output with the help of inbuilt ADC. Joystick when tilted in the forward direction makes the wheel chair moves forward. When tilted in reverse direction makes the wheel chair move back ward and same applies for the left and right directions.

This project makes use of a micro controller, which is programmed, with the help of embedded C instructions. This Microcontroller is capable of communicating with input and output modules. The user can select any path with the direction using push buttons and joystick for controlling purpose. The controller is interfaced with two dc motors, which are fixed to the wheel chair to control the direction of the wheel chair.

Features:

1. Can be easily controlled using joystick.
2. Ease in understanding the working module.
3. Easy to operate.
4. Low power consumption.

This project provides us with the learning's on the following aspects:

1. Joystick technology.
2. Interfacing DC Motors with Microcontroller.
3. Interfacing IR obstacle sensor with Microcontroller.
4. Embedded C programming.
5. PCB Design and development.

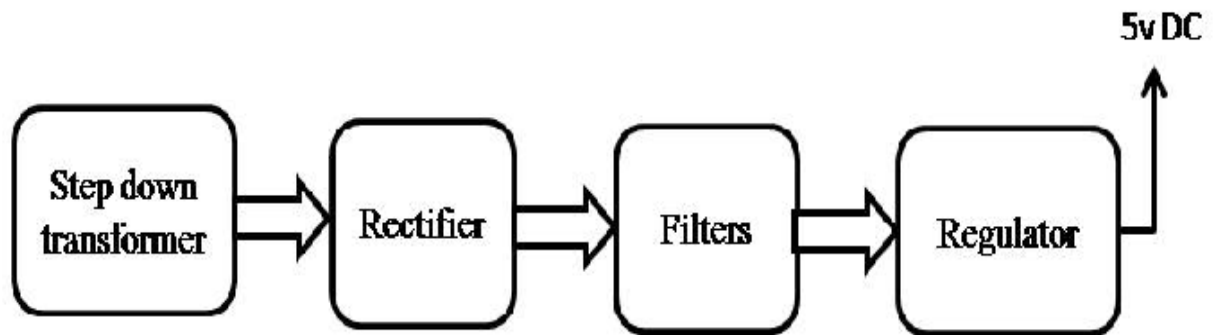
The major building blocks of this project are:

1. Regulated Power Supply.
2. IR obstacle Sensor.
3. Microcontroller.
4. DC motor with driver.
5. Buzzer
6. Crystal oscillator.
7. LED indicators.
8. Reset

Software's used:

1. PIC-C compiler for Embedded C programming.
2. PIC kit 2 programmer for dumping code into Micro controller.
3. Express SCH for Circuit design.
4. Proteus for hardware simulation.

Regulated Power Supply:



Block diagram:

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