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# **WHEEL CHAIR DIRECTION CONTROL WITH GESTURE RECOGNITION (MEMS ACCELEROMETER)**

## **ABSTRACT**

Micro electromechanical systems (MEMS) (also written as micro-electro-mechanical, Micro Electro Mechanical or microelectronic and micro electro mechanical systems) is the technology of very small mechanical devices driven by electricity and it merges at the nano scale into nano electromechanical systems (NEMS) and nanotechnology.

MEMS are separate and distinct from the hypothetical vision of molecular nanotechnology or molecular electronics. MEMS are made up of components between 1 to 100 micrometers in size (i.e. 0.001 to 0.1 mm) and MEMS devices generally range in size from 20 micrometers (20 millionths of a meter) to a millimeter. They usually consist of a central unit that processes data, the microprocessor and several components that interact with the outside such as micro sensors.

The main aim of this project is to control the wheel chair using MEMS. The MEMS will be fixed to the hand. Whenever the hand moves in a particular direction, the mechanical movement of the hand will be recognized by MEMS. MEMS converts this mechanical hand movement into equivalent electrical signals(X, Y, Z coordinates) and send it to the microcontroller. The communication between microcontroller and MEMS takes place based on i2c protocol. In this protocol microcontroller acts as a master and MEMS acts as a Slave. The master receives the signals from slave and based on them it controls the wheel chair.

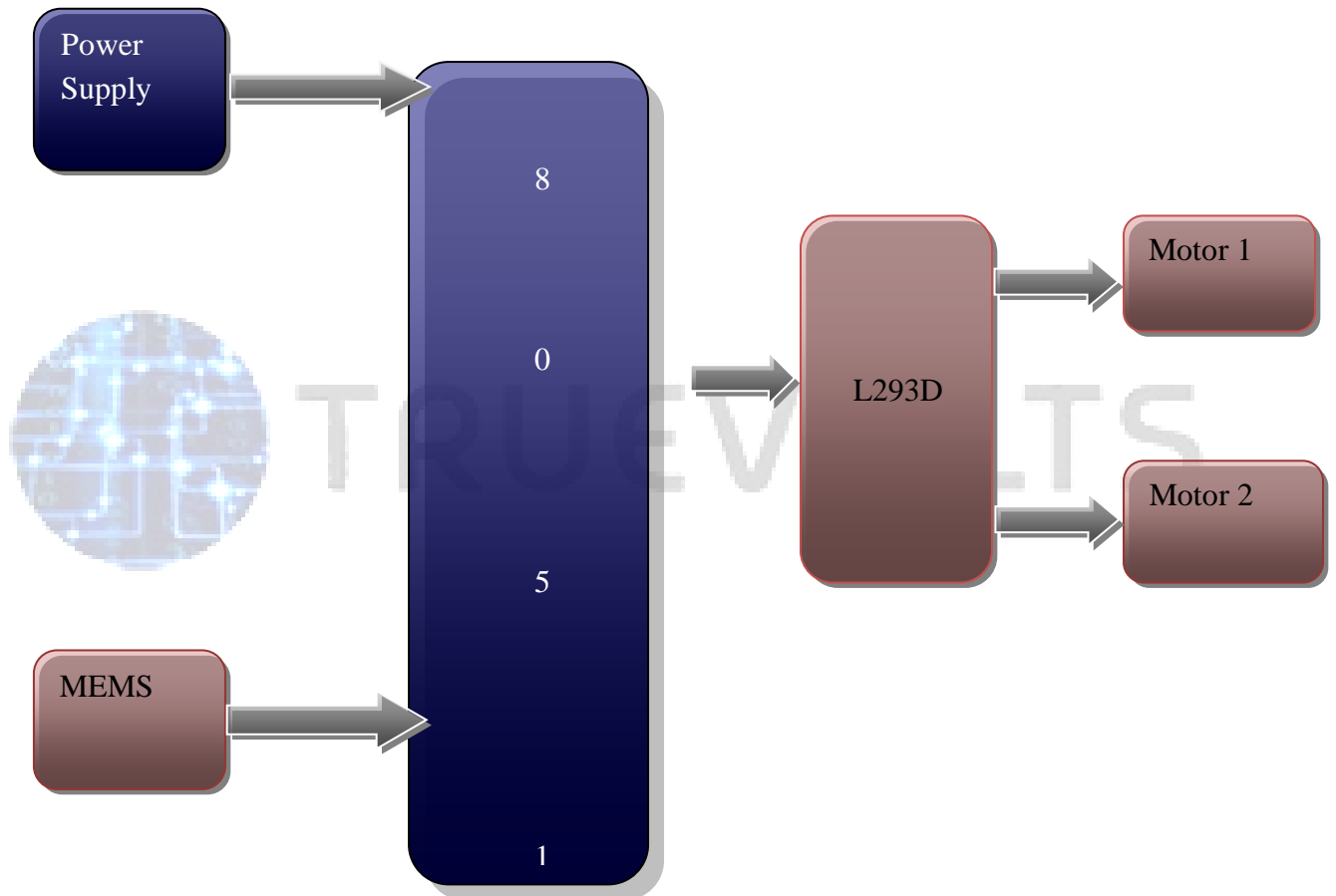
Wheel chair has two D.C gear motors. These motors move in 2D direction with the help of driver IC L293D according its input signals. This driver acts as H-bridge.

This project uses regulated 5V, 500mA power supply. 7805 three terminal voltage regulator is used for voltage regulation. Full wave bridge rectifier is used to rectify the ac output of secondary of 230/12V step down transformer.

## APPLICATIONS

- Industrial applications
- Automatic control systems
- Hospital management

## BLOCK DIAGRAM:



## POWER SUPPLY BLOCKDIAGRAM:



A1, 2<sup>nd</sup> FLOOR, EUREKA COURT, KS BAKERY BUILDING, OPP. R.S.BROTHERS LANE, AMEERPET,  
HYDERABAD, TELANGANA-500073.

Call: +91 9908665239

email: [info@truevolts.com](mailto:info@truevolts.com)

Website: [www.truevolts.com](http://www.truevolts.com)



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A1, 2<sup>nd</sup> FLOOR, EUREKA COURT, KS BAKERY BUILDING, OPP. R.S.BROTHERS LANE, AMEERPET,  
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