

FINAL YEAR PROJECT REPORT

# **Design and Implementation of Automatic Wheelchair via MEMS Based Technology with Obstacle Detection**



**A PROJECT REPORT**

*Submitted by*

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## **ABSTRACT**

This paper introduces an automatic wheelchair which can be controlled with the help of simple hand gestures and those patients suffering from quadriplegia (Failed to move their body parts except head) can simple use their head movements and can control the rotation of wheelchair motors by using accelerometer sensor.

This all can be achieve by use of embedded system design. Embedded systems are such systems which can be controlled by one or more processing cores. Microcontroller (Pic16f877A) is the part of embedded system design which can be used to interface sensor modules like accelerometer and ultrasonic sensor used in our project. By proper data manipulation in microcontroller and depending upon the direction of the tilt of MEMS based 7361L accelerometer sensor wheelchair can be moved forward, backward, right, left. The entire circuit is driven by wireless technology and divided into two parts.

- 1) Transmitter
- 2) Receiver

Ultrasonic sensor is used in order to detect obstacles and stop wheelchair immediately in order to avoid collision.

**Key Notes: MICROCONTROLLER, MOTORS, ACCLEROMETER SENSOR, ULTRASONIC SENSOR.**