**M S Ramaiah Institute of Technology**

(An Autonomous Institute, Affiliated to VTU)

MSR nagar, MSRIT post, Bangalore-54

A Dissertation Report on

**Head movement based wireless communication with speech alert for Paralyzed Person**

Under the guidance of

Mr. Pramod Sunagar

Submitted by

Vishal Kumar Sah 1MS12CS133

Vikash Bajoria 1MS12CS131

Rakesh Roshan 1MS12CS088

Supratik Sharma 1MS12CS118

*In partial fulfillment for the award of the degree of*

# *Bachelor of Engineering in Computer Science & Engineering*



**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

**M.S. RAMAIAH INSTITUTE OF TECHNOLOGY**

**(Autonomous Institute, Affiliated to VTU)**

**BANGALORE-560054**

[www.msrit.edu](http://www.msrit.edu), **May 2015**

**Head movement based wireless communication with speech alert for Paralyzed Person**

**Abstract**

There are many cases of patients with partial paralysis of the body parts where in patients are not able to move some of their body part like limbs i.e. hands and legs and hence become totally dependent on others even for smaller tasks like controlling a fan’s speed on turning on/off the lights etc. This project exploits the limited head movement capability of the patients and uses movements of head as a trigger to control certain home appliances and also use voice recognition in order to recognize the voice of the patient to do similar tasks which are simple like controlling of simple home appliances and yet the patient depends on others. The idea behind this project is to reduce the dependency of the paralyzed patient on others for very simple yet necessary day to day tasks.

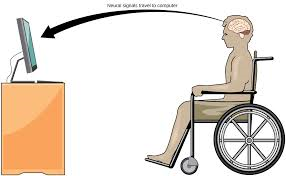
Apart from this we intend to add a functionality to alert people in case of an emergency situation where in there is an absolute requirement of other people to attend the patient. With a motion of the head the patient can shake his head in a particular fashion to alert others of some uncomfortable or emergency situation and the attendants of the patient need not always monitor him from close by as an alert can be created and passed on to a person far off also by using an existing cloud infrastructure.

Apart from this there is a way to monitor the real time activities of the patient and monitor all the commands that have been executed by the head movement of the patient in a span of last two hours to check for any irregularity in the behavior of the patient using a web app or android app for the same.

**Introduction**

In some cases due to spinal cord injury human can lose controller over all his body parts except head. In such cases for the help of the patient there is a requirement for a helper at every time. For example if the patient requires fan then he should inform to his helper like this are many instances where he requires helper like in switching fan, lights, TV.. Etc. These purposes can be served without the need of another human help.

This project serves the purpose of controlling the home appliances by physically handicapped patients without the need of a helper. Here flex sensors are attached to a head mask of the patient. Just by the movement of the head the patient can control the home appliances.

****

**Figure 1.project Diagram**

**PROJECT DESCRIPTION**

**BLOCK DIAGRAM:**



Accelerometer Sensor is connected to the head of the patient according to the movement of the head the flex sensor bends and corresponding to that the resistance of the flex sensor changes. The output of the flex sensor is connected to the ADC where it gives digital equivalent voltage to the analog input.

Micro controller gets digital inputs from ADC. Program is burnt into micro controller which is connected with Zigbee. Zigbee is a Wireless transceiver. Where it can receive signals up to 100m. UART protocol is used to communicate between micro controller and Zigbee.

Receiver Zigbee receives the signals and transfers it to the micro controller through UART. The controller activates the relays according to the input condition. The relays activate the home appliances which is required.

**APPLICATIONS**

* Used for physically handicapped people
* Also can be used to monitor patients from a distance
* Very useful to alert in emergency situations

**ADVANTAGES**

* Avoids or reduces helpers for the handicapped people
* Easy to use