MOVEMENT SYSTEM FOR BLIND PEOPLE

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ABSTRACT

In our day to day life, we as a normal person switch on-off electrical equipments at our home such as light when there is dark or switch on fan when there is hot atmosphere. Some people who are physically disable due to disease and injury cannot simply switch the electrical devices as a normal person. In our project we are using an *accelerometer (*for tilt measurement), *relay* (for switching purposes) and some basic *analog signal processing circuits* through which we will develop a piece of assistive technology (AT) for our patient whose switching system will be movement triggered. This concept we will use for switching system to turning on and off the household loads..*[1]*

Keywords :- Accelerometer, OP-AMP, Transmitter, Voltage Regulator, Variable Resistor

1. Introduction

In project we are going to design and develop a movement system for disabled peoples whose needs have been described to us by the Doctor. The switch will use an accelerometer which we will be placed on the user's body's part convenient according to him whose output will enable to generate a switching action

Our aim is to utilize the movement of the patient's body parts to on/off any load connected to his room which should be helpful in increasing of their dependency level.[2]

2. Methodology Design

Step: 1 Patient's allowable body movements:

we met the patient who was physically disabled, he explained us that his only reliable movement was only his wrist movements his other body parts were not able to function due to paralysis. His wrist movements are also restricted thus we have to design the switch which activates any household devices by means of his wrist movement.To sense his wrist movements we need accelerometer which measures the change in acceleration in any direction (i.e. motion by patient). Following are the images which explain the patient's movements.

Thewrist of the patient can easily move upward, downward, left side and the right side which are called as Extension, Flexion, Probation and Supination. After getting information about the patients only body movement we went on developing our project as per the patient's body needs andrequirements[2]

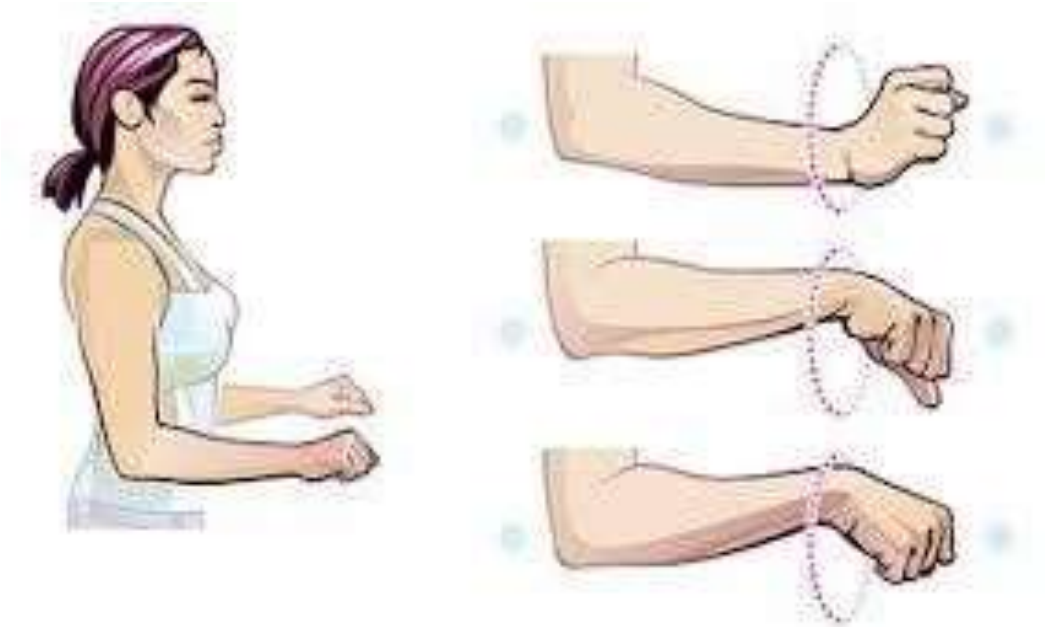

Figure Patient's allowable body movement

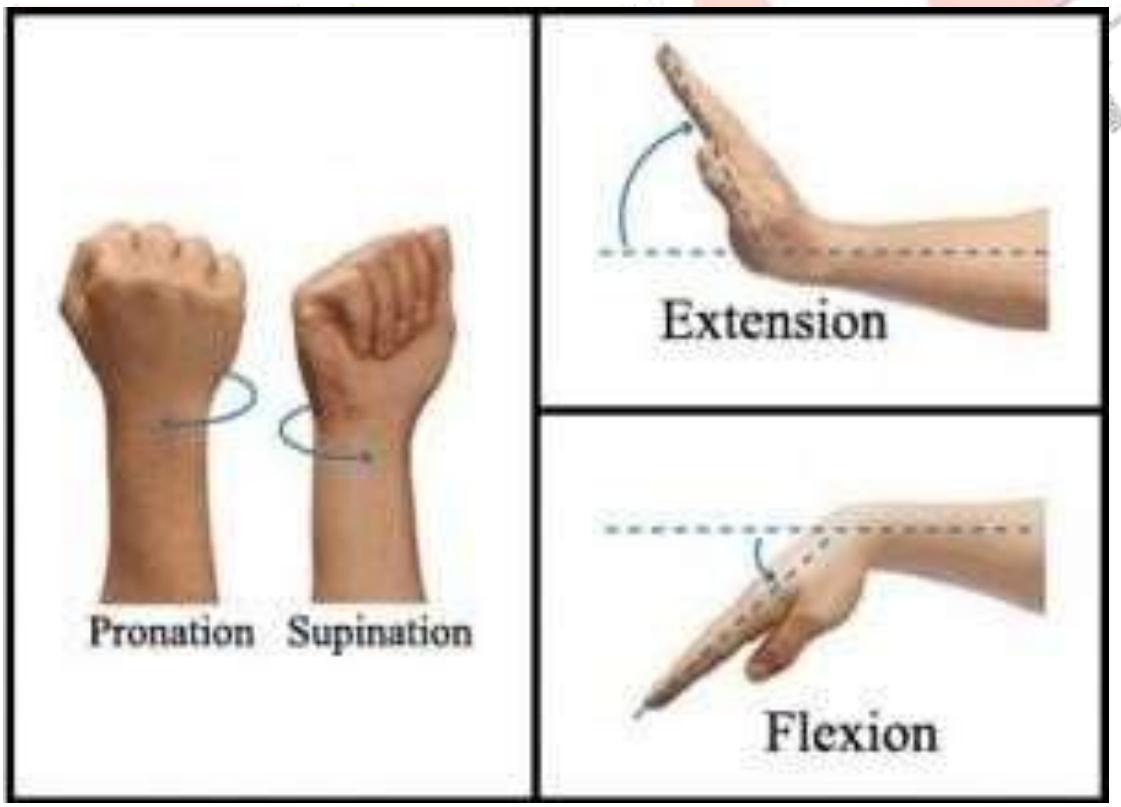

Figure Patient's allowable body movement -

Step: 2 Micro-controller Programming:

The detailed programming of the final circuit done is given below.

```
int switchPin = 12;
int switchPin2 = 11;
int switchPin3 = 10;
int switchPin4 = 9;
int led = 5;
int  led2  =
6;  int  led3
=    7;    int
led4 = 8;
int buttonState =
0; void setup ()
{
  pinMode(switchPin,INPUT);
  pinMode(switchPin2,INPUT);
  pinMode(switchPin3,INPUT);
  pinMode(switchPin4,INPUT);
  pinMode(led,OUTPUT);
  pinMode(led2,OUTPUT);
  pinMode(led3,OUTPUT);
  pinMode(led4,OUTPUT);
}
void loop()
{
buttonState = digitalRead(switchPin);
if(buttonState == LOW)
{
  digitalWrite(led,HIGH);
  delay(2000);
}
else
```

```
{digitalWrite(led,LOW);
}
buttonState = digitalRead(switchPin2);
if(buttonState == LOW)
{
  digitalWrite(led2,HIGH);
  delay(2000);
}
else
{digitalWrite(led2,LOW);
}
buttonState = digitalRead(switchPin3);
if(buttonState == LOW)
{
  digitalWrite(led3,HIGH);
  delay(2000);
}
else
{digitalWrite(led3,LOW);
}
buttonState = digitalRead(switchPin4);
if(buttonState == LOW)
{
  digitalWrite(led4,HIGH);
  delay(2000);
}
else
{digitalWrite(led4,LOW);
}
}
```

CASE STUDY

Motion sensor switch is a switch that triggers itself when it detects the motion as per required. There are various kinds of motion sensor switches which are used for switching purpose for example when a person

enters in a room the lights and fan connected itself switches on due to presence of human motion and switches off when no motion detected. For our project we had studied various assistive technologies that are compatible with our patient. [1]

Through our problem specification we went to meet **Physiotherapist** about how an Assistive technology provides help to the Disable peoples. While interacting with the Physiotherapist we came to know about many patients who were suffering from various injuries and the only allowable body parts of the patients which we can use in the making of our project for the switching action. We came to know about much type of injuries that includes paralysis in various body parts like as in arms, legs, upper body or lower body. The therapist introduced us with his one of the patient who was suffering from **Paraplegia** which affects both of his legs which leads him to be on a wheel chair for life time.

4.CONCLUSION

In our project we have been given the challenge of developing, designing and building a movement triggered Switching system for disable person whose needs, demands and weakness have been described to us by the Physiotherapist. The developed switch or product made by us consists of an accelerometer placed on the user's body part whose output is processed to generate a switching action by the use of RF module. The Transmitter unit and Reciever unit of RF module will transmit the signal from output obtain from the accelerometer. The demonstration work carried by our testing proves that our system works very well.

5.REFERENCES

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