

# Wireless gesture based mouse

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**Abstract**—The main objective of this project is to design gesture operated wireless digital mouse. this system is divided in to the two parts. First is transmitter section, which is consists of MEMS sensor for motion detection and it will convert the hand movement into electrical signals. Controller converts this information into specific code and then transmits through wireless module. Second one is receiver section. This section receives the coded information and send to the computer. Computer works as per the commands and moves cursor. In receiver section it also commands to the other devices like light, and curtains.

Keywords: Atmega16 and 162, Flex sensor, MEMS Accelerometer

## I. INTRODUCTION

The Development of information technology is increase day by day in our society and computer system is very essential and important part of the human life. Because of the information technology the time taken for all the environmental things is very less..The user interface of the personal computer has developed from a text-based command line to a graphical interface with keyboard as well as mouse are taken as a inputs. But for human being they are inconvenient and also they are very much unnatural.

So to overcome these drawback some attractive alternative has to be taken place. The use of hand gestures provides an attractive alternative to these interface devices for human-computer interaction. Because of these visual interpretation of hand gestures can help in achieving the easy. The most important factor while doing these type of a system the cost factor is much more important. The cost of these wireless

gesture based mouse is very less. A gesture may be defined as a physical movement of the hands, arms, face, and also body to convey information from gesture to the system. Gesture system, then tracking of human movement, and also the interpretes the movement of human gesture with the meaningful commands. These system commonly uses two approaches to interpret gestures for Human Computer interaction.

## II. CURRENT SYSTEM

In current system we can use the actual device or mouse. for this system we can use the embedded system as well as image processing. But drawback of image processing is that the user continues wants to seat in front of the camera. so it is not suit-able for the user. And also while doing these system light is necessary. But while presenting some presentations light and curtons will be off at that time. So we can unable to use these system. Here we implement or fulfill that all drawbacks .

## III. PROPOSED SYSTEM

Our objective is to make this objective simple as well as cheap so that It could be a mass produced and can be use for number of purposes. To design a system for wireless mouse that oper-ates on hand gesture. Also built a system which handle seminar hall automation as well as mouse operation on hand gesture without any failure We can use here the embedded system as well as image processing. And we wants to made a mouse which does not have any range problem and not a actual device in our hand. We

can create the mouse which can be operated all necessary functions with the help of hand gesture. some presentations can be present while light is off. At that time the help of embedded system overcome the drawback.

In these system we can use the different types of sensors like MEMS sensor, flex sensor. That can give our hand movements into an analog output and that can be mapped in the coding. MEMS accelerometer can be useful for the right, left, front, back cursor movement.

The main feature of the accelerometer is that when cursor is at normal position it can give the 0.9v output. And when we tilt that accelerometer at one side the output can be changed to 0 to 0.9v. and when we tilt that at another side then we give the output from 0.9v to 1.8v. so the basic movements of mouse that means right, left, front, back can be done with the help of MEMS accelerometer. Flex sensor can be useful for the auto-mation purpose that means for the light on off, curtains open close. The main property of the flex sensor that when flex sensor is at straight level then the resistance will be at normal position. And when we bend these sensor the resistance will be minimum or maximum.

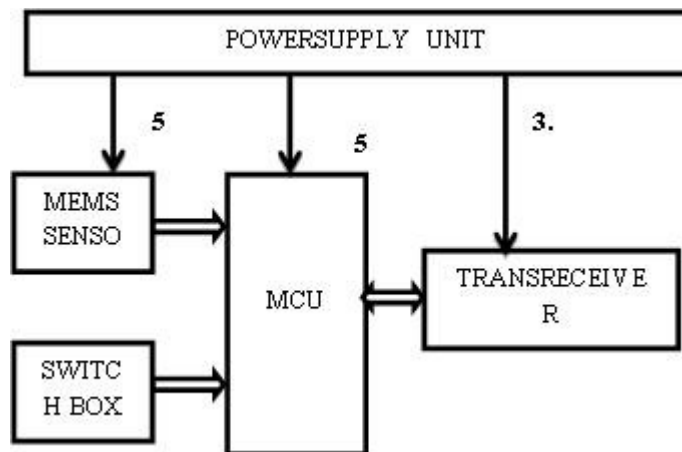


FIGURE: BLOCK DIAGRAM OF TRANSMITTER

The transmitter section mainly

- consist of: 1. Power supply unit
- 2. MEMS sensor
- 3. MCU
- 4. switch box and
- 5. Transreceiver

1) Power supply : This section provides 5v supply to both the sensors as well as microcontroller unit. Transreceiver gets 3.3v supply.

Here two serial ports and one bidirectional port is used for interfacing of microcontroller

2) MEMS sensor :

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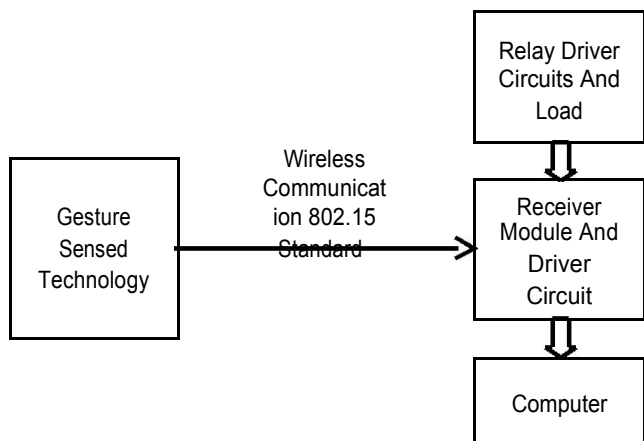
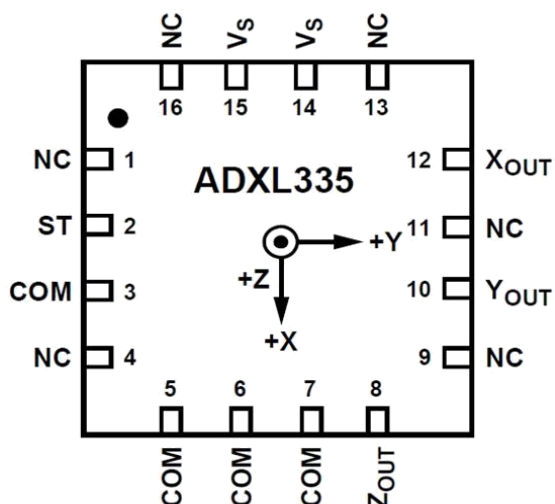


FIGURE: FUNCTIONAL BLOCK DIAGRAM

Functional block diagram mainly consist of two sections: 1. Transmitter section and 2. Receiver section

Transmitter section is a gesture sensed technology and receiver section consist of Relay driver circuits and loads, Receiver module and computer.

Here we can use the wireless communication 802.15 standard as a PAN that means personal area network.



Receiver section consist

- of : 1.Power supply unit
- 2.USB to serial
- 3.MCU
- 4.PC
- 5.transreceiver
- 6.Relay Driver
- 7.Relay Bank

3) Microcontroller : The microcontroller used in Transmitter Section is AVR Atmega 16. Microcontroller provides synchronization between sensors and Transceiver. Atmega 16 has only one UART port and here we want only one UART for transceiver.

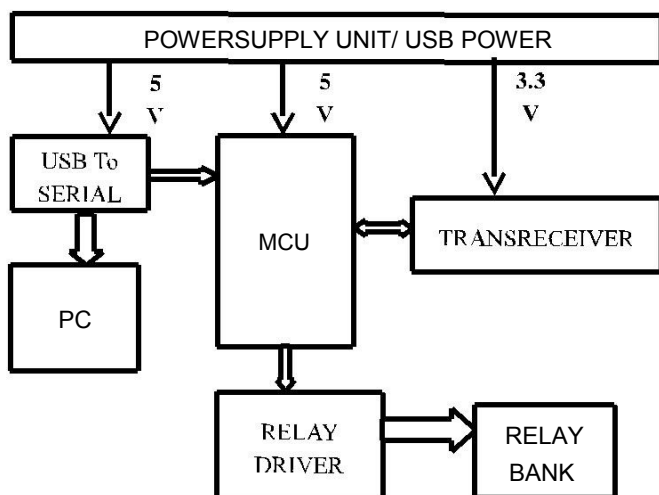
4)Transceiver: Transceiver mainly consists of Transmitter and Receiver. Here we used 802.15 protocol , which is nothing but Zigbee.

Zigbee receives information from microcontroller and provides Data to Receiver section. Zigbee provides Digital output to the Receiver zigbee.

Specifications of Zigbee :

- 802.15.4/Multipoint network
- topologies •2.4GHz for worldwide
- deployment •Low-power sleep modes

FIGURE:BLOCK DIAGRAM OF RECEIVER



1) Power supply : This section provides 5v supply to both the USB To Serial as well as microcontroller unit. Also Transreceiver gets 3.3v supply.

2) USB to serial : : As in computer system requires data in Serial form , so USB to Serial converts the data received from microcontroller in serial form to the personal computer. And the personal computer shows the respective output in graphical form which is known as ECG.

3) MCU : The microcontroller used in Receivers section is AVR Atmega664 or 162. The function of these Receiver microcontroller is it displays the received information from Transreceiver on the LCD display. Atmega 162 has two UART ports and in receiver side we wants two UART,one for USB to serial and second is for transreceiver.

4) :Relay Driver : Relays are useful for on off the light,open close doors and curtans. Relays act as a switch. These relays are placed in a relay bank. controller ICs are useful for the interfacing of MCU to relay. Relays are useful for the voltage converter. because relays are operated at 12v and MCU are operated at 5v.so to convert 5v to 12v relay drivers are used.

#### IV. CONCLUSION :

With this proposed system as compared to the traditional existing systems it is more efficient method to monitor seminar hall while presenting the presentations. With the help of wireless gesture based mouse system we are able to monitor instrument in seminar hall like light on off, curtans open close,door open close.

In these system we are implement the embedded as well as automation system with the help of wireless gesture. Wireless mouse can be taken virtually anywhere Compatible with every laptop and desktop computer.

Also it has Long range as compared to range of Bluetooth

Wireless mouse has More option than conventional mouse

Easy to use, multiple operations can be done using single mouse.

## **REFERENCES**

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