



WIRELESS HAND GESTURE MOUSE

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ABSTRACT

In developed era of information technology we require fastest response in every technology in one is cursor movement through mouse now a days we are using optical mouse and wireless mouse both required surface for their operation we have proposed a mouse which performs without any surface as well as it is wireless which gives fast response with long range it works on hand movement of user means cursor moves according to hand movement of user.

Keywords:-Wireless mouse, Accelerometer sensors.

I INTRODUCTION

The Development of information technology is increase day by day. In Today's world optical mouse have a limited range. They work within the length of their connecting cable and require a surface to work on. Wireless mouse also required surface. Gesture is a very natural human communication capability. The idea is to use natural, comfortable motions to control computers. Our approach deals with the bringing of the mouse control in hand motion [1]. The basic technique is the use of microcontroller and a wireless channel which will bring the mouse in the contact of the computer. A gesture may be defined as a physical movement of the hands, arms, and also body for convey information from gesture to the system. Gesture system, then tracking of human movement, and also interprets the movement of human gesture with the meaningful commands [2]. This system commonly uses two approaches to interpret gestures for Human Computer interaction.

II PROPOSED SYSTEM

Our objective is to make this objective simple & cheap system, So that it could be a mass produced and can be used for number of purposes. To design a system for wireless mouse that operates on hand gesture such that it will handle mouse operation on hand gesture without fail [4].

It is an actual device mounted or wears on hand & specific movement of hand is used to control specific functions of mouse. Accelerometer sensor is used to gather data of hand movement. This data is in form of analog values of 3-Axis X, Y, Z direction.

Functional block diagram mainly consist of two sections:

1. Transmitter section and

2. Receiver section

Transmitter section is accelerometer and XBEE transmitter. Receiver section consists of XBEE receiver, microcontroller interface connected to computer.

The system uses the wireless communication 802.15 standard as a PAN that means personal area network.

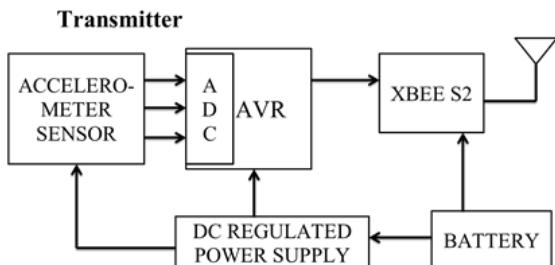


Figure 1: Block Diagram of Transmitter

The transmitter section consists of:-

- Accelerometer
- ATMEGA328 microcontrollers:
- ZIGBEE S2
- Power Supply unit

Accelerometer: One of the most common inertial sensors is the accelerometer. These are used to measure acceleration in one, two, or three orthogonal axes. Accelerometer device used to detect the static or dynamic change in position.

If there is some tilt in accelerometer then cursor position changes in response to that tilt and position of x, y coordinate. Position of mouse cursor on computer screen that is left, right, up, down direction.



Figure 2: 3-Axis Accelerometer

An accelerometer is an electromechanical device that measures acceleration forces. These forces may be static or dynamic, static – like the constant force of gravity and dynamic – caused by moving or vibrating the accelerometer.

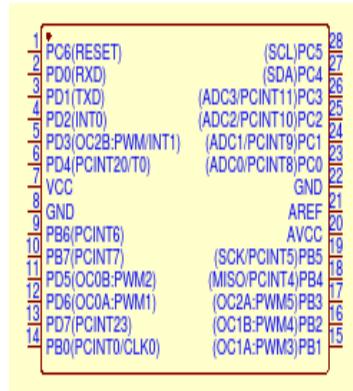


Figure 3: Pin diagram of ATMEGA328

ATMEGA328 microcontrollers: AVR is family of microcontrollers developed by Atmel beginning in 1996. These are modified Harvard architecture 8-bit RISC single chip microcontrollers. AVR microcontrollers find many applications as embedded systems; they are also used in the popular Arduino line of open source board designs.

The AVRs have 32 single-byte registers and are classified as 8-bit RISC devices. In most variants of the AVR architecture, the working registers are mapped in as the first 32 memory addresses followed by the 64 I/O registers.

Zigbee: -ZigBee is a specification for a suite of high-level communication protocols used to create personal area networks built from small, low-power digital radios. ZigBee is an IEEE 802.15 standard.

Specifications of Zigbee: -

- 802.15.4/Multipoint network topologies
- 2.4GHz for worldwide deployment
- Low-power sleep modes.
- Range is 30-90 meter.

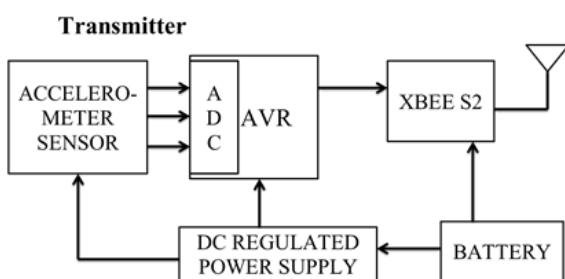


Figure 4: Block Diagram of Receiver

Receiver section consists of: -

- Zigbee S2 Receiver
- USB To serial port
- Computer

Zigbee S2: -Zigbee S2 is own Mac address to value changes the hand moving in gesture mouse. It is used to interfacing through USB Serial Port.



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].



Figure 5: XBEE Module

III APPLICATION

This project is the advancement of regular mouse that we use and can be useful for gaming. In near future this will completely replace mouse that we are using now a days [3]. It can be used in presentations where presenter can extends his position up to 90 meters.

IV CONCLUSION

This system implements the embedded with the help of wireless gesture. Wireless mouse can be taken virtually anywhere compatible all the operating systems. This system is used to control computer mouse cursor for this an accelerometer sensor is used. The advantages of using an accelerometer approach intended for control using laryngeal vibrations, compared to supplementary sensor, is that the user has only control over an apparatus or device. Surroundings noise is not recorded and consequently it does not interfere with a user controlling an instrument or device.

The future advancement in this project can be faster signal communication speed, better Sensitivity.

REFERENCES

- [1] Swapnil Badgujar, Gourab Talukdar”, Hand Gesture Recognition System”, International Journal of scientific and Research Publications, Volume 4, Issue 2, February 2014, ISSN 2250-3153
- [2] Y. Fang, K. Wang, J. Cheng and H. Lu, A Real-Time Hand Gesture Recognition Method, 2007 IEEE International Conference on Multimedia and Expo, Beijing, 2007, pp.995-998
doi: 10.1109/ICME.2007.4284820
- [3] Cao Chuqing, Li Ruiqiang, Ge Lianzheng, Real-time multi-hand posture recognition, Computer Design and Applications, (ICCDA) 2010 International Conference, vol.1, pp. V1-619-V1-623, 2010.
- [4] Apeksha Agarwal, An Approach to Global Gesture Recognition Translator, Parul Yadav International Journal of Engineering Research and General Science Volume 2, Issue 3, April-May 2014 ISSN 2091-2730