

Smart Glove as a Mouse

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Abstract: - Mainly our aim is to manage the computer system with gestures. The idea is to develop the virtual mouse using three sensors and Leonardo board. This product will not only overcome the drawbacks of optical mice but also provide some additional features. If we think on basis of price then we are planning to develop our product which will have less cost as that of the existing one with same features.

We are using the arduino technology and the proposed project is to design a glove that allows a user to control the mouse pointer on a Windows, personal computer with simple hand and wrist movements. Mouse buttons, scroll functions will be implemented with bend sensors on the fingers.

Keywords:- Accelerometer, Arduino Leonardo, flex sensor, gyroscope.

I. INTRODUCTION

Since the computer technology continuously growing, human to computer interaction is also vastly increasing. The input technologies we use still have some drawbacks like deadlocks and limited range, which may restrict the response of application use. Optical mice have limited range. They work within the length of their connecting cable and require a surface to work on. Even in the case of a wireless mouse the requirement of a surface is still required. So the fact that it is wireless is not much of use other than allowing for a desktop with fewer wires attached.

To overcome such limitations we are planning to create a virtual human-computer interaction device such as mouse using sensor. So the main purpose is to create a device which will easily interact with computer system. A hand gesture based human-computer interface system is very attractive way to utilize hand gesture as a "mouse".

II. LITERATURE SURVEY:-

The idea is to develop a model which will be provide gesture based human computer interface. The device provides user friendly interaction with computer and combining with Bluetooth connectivity provides reliable wireless communication.

III. PROPOSED WORK:-

Our device will be able to perform all the tasks of mouse using hand gesture. In image processing the motion should be confined in short area but our device is allows larger area for motion.

IV. BLOCK DIAGRAM:-

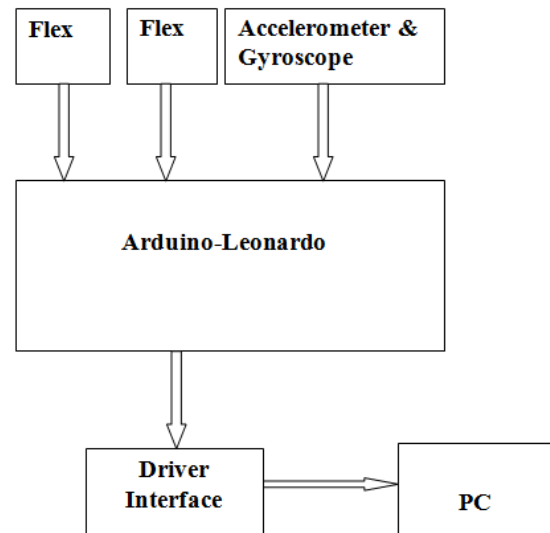


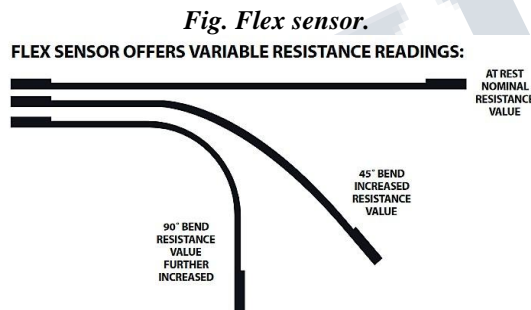
Fig. Block diagram.

Above figure shows the block diagram of glove. Movement of hand is detected by accelerometer. Then accelerometer send signals to Leonardo, which

accepts a signal and forward instruction to computer. Flex sensors are used to detect clicking action and they sends signal to Leonardo. This signals are converted into click event by Leonardo and forwarded to computer.

V. FLEX:

The flex sensor is a device that changes its resistance. ‘Flex Sensor’ or ‘Bend Sensor’ is the one that changes its resistance depending on the amount of bend on the sensor. As a variable printed resistor, the Flex Sensor achieves great form-factor on a thin flexible substrate. When the substrate is bent, the sensor produces a resistance output correlated to the bend radius—the smaller the radius, the higher the resistance value addition to a virtual (CDC) serial / COM port. It also has other implications for the behavior of the board.



VI. ACCELEROMETER AND GYROSCOPE(GY-521):

Gyroscope is a device used for measuring the angular velocity in the three axes. It works under the concepts of angular momentum and can be used to determine the orientation of an object. Typical applications of

gyroscope includes missile guidance, flight control, smart phones, game station joy sticks etc. Mechanical gyroscopes, MEMS gyroscope, optic fiber gyroscope, ring laser gyroscope.

Accelerometers measure acceleration, you can easily use this information to calculate the tilt of an object by subtracting the current accelerometer data from a value that you know to be zero tilt.

VII ARDUINO-LEONARDO:

The Arduino Leonardo is a microcontroller board based on the ATmega32u4 (datasheet). It has 20 digital input/output pins (of which 7 can be used as PWM outputs and 12 as analog inputs), a 16 MHz crystal oscillator, a micro USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started.

The Leonardo differs from all preceding boards in that the ATmega32u4 has built-in USB communication, eliminating the need for a secondary processor. This allows the Leonardo to appear to a connected computer as a mouse and keyboa

VIII CONCLUSION:-

All the drawbacks of the optical as well as of laser mouse are overcome by our module such as region restriction and about surface required. One of the important drawbacks of image processing is detection of motion which will be overcome by us. One important thing is that it will not make any kind of harm to hand by continues use of it as like optical or laser mouse.

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