WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

Glove Mouse

Assistant Prof. Mrs. S. R. Ghorpade, Chandramaya Pradhane, Neha Borgave, Asmita Korbu, Nikita Mane

Student, Electronics & Telecommunication Engineering, Sharad Institute of Technology College of Engineering, Yadrav, Ichalkarnji, India

ABSTRACT:

This document gives formatting instructions for authors preparing papers for publication in the Proceedings of an International Journal. The authors must follow the instructions given in the document for the papers to be published. You can use this document as both an instruction set and as a template into which you can type your own text.

Keywords: Glove Mouse, Wireless Bluetooth, Wide range, Accelerometer

Introduction

This project “GLOVE MOUSE” aims to create a computer peripheral allowing for touch-based control. Recently, products such as the Apple iPhone and Microsoft Surface have showed that alternative methods can be used to interact with computers in different ways. This project is to make a prototype device that has functions like touchpad but without the special surface.

Review of literature

In computing, a mouse is a pointing device that detects two-dimensional motion relative to a surface. This motion is typically translated into the motion of a pointer on a display, which allows for fine control of a graphical user interface.
Physically, a mouse consists of an object held in one's hand, with one or more buttons. Mice often also feature other elements, such as touch surfaces and "wheels", which enable additional control and dimensional input.

Proposed work

A glove with buttons at fingertips will serve this purpose. The device uses Bluetooth to communicate with the host computer. The device will be a human interface device which can be attached to the hand like a glove. The device will communicate with the computer using Bluetooth and functions like a regular mouse/touchpad. This device consists of 3
main circuitry namely the sensing circuit, controller circuit and the Bluetooth transceiver. The Sensing circuit consist of buttons at finger tips. The buttons get the axis information. The axis information is given to the controller. The
controller coverts into proper format and send to host computer via Bluetooth module. By detecting different finger movements and finger tapping, various functions such as cursor movement, scrolling, and button clicking can be achieved. If technical challenges can be overcome, additional features such as multi-touch capabilities can be implemented.
The physical design of our project includes two main parts: a glove unit and Bluetooth module. The glove unit's main purpose is to process information from sensors and transmit the user input to the host computer using Bluetooth module. The Purpose of Bluetooth module is to send the glove's data to the host computer. The host computer then receives this data through an inbuilt Bluetooth module which is further processed by computer’s software.

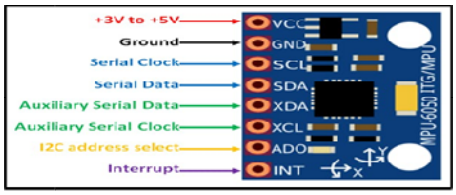
Hardware used

A. HC-05BLUETOOTHMODULE

HC-05 module is an easy-to-use Bluetooth SPP (Serial Port Protocol)module,designedfortransparent wirelessserial connection setup. SerialportBluetoothmoduleisfullyqualifiedBluetoothV2.0+EDR(Enhanced Data Rate) 3Mbps Modulation with complete 2.4GHz radio transceiver andbaseband. It uses CSR Blue core 04-External single chip Bluetooth system with CMOStechnology and with AFH (Adaptive Frequency Hopping Feature). It has the footprint assmallas12.7mmx27mm.Hopeitwillsimplifyyouroveralldesign/developmentcycle.

B. Node MCU

NodeMCU is an open-source platform based on ESP8266 which can connect objects and let data transfer using the Wi-Fi protocol. In addition, by providing some of the most important features of microcontrollers such as GPIO, PWM, ADC, and etc, it can solve many of the project's needs alone.NodeMCU is an open-source firmware for which
open-source prototyping board designs are available. The name "NodeMCU" combines "node" and "MCU" (micro-controller unit). The term "NodeMCU" strictly speaking refers to the firmware rather than the associated development kit. Both the firmware and prototyping board designs are open-source.The firmware uses the Lua scripting language. The firmware is based on the Eula project, and built on the Espressoif Non-OS SDK for ESP8266. It uses many open-source projects, such as lua-cjsonand SPIFFS. Due to resource constraints, users need to select the modules relevant for their project and build a firmware tailored to their needs. Support for the 32-bit ESP32 has also been implemented. The prototyping hardware typically used is a circuit board functioning as a dual in-line package (DIP) which integrates a USB controller with a smaller surface-mounted board containing the MCU and antenna. The choice of the DIP format allows for easy prototyping on breadboards. The design was initially based on the ESP-12 module of the ESP8266, which is a Wi-Fi SoC integrated with a Ten silica Xtensa LX106 core, widely used in IoT applications (see related projects).



C. Accelerometer

An **accelerometer** is a tool that measures proper acceleration. Proper acceleration is the acceleration (the rate of change of velocity) of a body in its own instantaneous rest frame; this is different from coordinate acceleration, which is acceleration in a fixed coordinate system. For example, an accelerometer at rest on the surface of the Earth will measure an acceleration due to Earth's gravity, By contrast, accelerometers in free fall (falling toward the centre of the Earth at a rate will measure zero.
Accelerometers have many uses in industry and science. Highly sensitive accelerometers are used in inertial navigation systems for aircraft and missiles. Vibration in rotating machines is monitored by accelerometers. They are used in tablet computers and digital cameras so that images on screens are always displayed upright. In unmanned aerial vehicles, accelerometers help to stabilize flight.
When two or more accelerometers are coordinated with one another, they can measure differences in proper acceleration, particularly gravity, over their separation in space—that is, the gradient of the gravitational field. Gravity gradiometric is useful because absolute gravity is a weak effect and depends on the local density of the Earth, which is quite variable.
Single- and multi-axis accelerometers can detect both the magnitude and the direction of the proper acceleration, as a vector quantity, and can be used to sense orientation (because the direction of weight changes), coordinate acceleration, vibration, shock, and falling in a resistive medium (a case in which the proper acceleration changes,increasing from zero). Micro machined microelectromechanical systems (MEMS) accelerometers are increasingly present in portable electronic devices and video-game controllers, to detect changes in the positions of these devices.

Advantages

1. NO NEED OF ANY SURFACE TO OPERATE.
2. NO NEED TO HOLD THE DEVICE.
3. WIDE RANGE

Limitations

1. COSTLIER THAN THE CONVENTIONAL MOUSE AVAILABLE
2. TAKES TIME TO GET HABITUAL.
3. SLIGHTLY BULKY

Applications

1. SMART USER-INTERFACE WITH COMPUTERS
2. CAN BE USED TO CONTROL HAPTIC ARM
3. CAN BE USED IN PRESENTATIONS TO CHANGE SLIDES.
4. COMPUTER GAMING
5. CONTROLLING MACHINERY IN INDUSTRIES

Conclusion

The project "Glove Mouse" has been successfully designed and tested. The various mouse cursor movements are observed by pressing different buttons on the gloves. It has been developed by integrating features of all the hardware components used. Presence of every module has been reasons out and placed carefully thus contributing to the best working of the unit. Secondly, using high advanced IC's and with the help of growing technology the project has been successfully implemented.

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