

# **Cordless Joystick and IMU Sensor Controlled Pointing Device for Personal Computers**

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**ABSTRACT:-**The proposed system is a minimalistic approach to a cordless mouse for the computer. A conventional PC needs a mouse to operate and control a part of its applications. A typical computer mouse is physically connected to the PC through wire, user has to sit in front of PC to operate it. This becomes very tedious when the PC is used for presentation purposes or designing purpose like CAD or Photoshop. In this proposed system user need not to operate the mouse placed on the table rather by holding the mouse in hand . The portable remote mouse can initiate input to PC using joystick or by Gestures. This approach will reduce the strain of user and helps to prevents Carpal Tunnel Syndrome.

**KEYWORDS:** Arduino Nano, Mouse, Remote control, Carpel Tunnel Syndrome.

## **I. INTRODUCTION**

In our daily computing life a Computer Mouse plays an essential role. A PC Mouse is an info gadget for PC. Moving a mouse close to a level surface can move the cursor to various situation on the two-dimensional screen.

### **A. FUNCTIONS OF COMPUTER MOUSE:**

- Left click
- Right
- 3.Scroll
- 4.Mouse cursor Movements.

### **B. GENERAL TYPES OF COMPUTER MOUSE**

- Trackball mouse
- Optical mouse
- Wireless mouse.

One of the main consequence is caused by Carpal Tunnel Syndrome. Carpal Passage Disorder is a general condition that causes Agony, Deadness, and Shivering in the hand and arm. Due to continuous compression on median nerve in the wrist.

## **II. EXISTING METHOD**

As we take the computer mouse it uses an approach of flat surface movements. In day to day, computer mouse designs are blooming and mouse like 2.4Ghz, laser technology, custom DPI(Dots per inch) settings etc... All these methods are by wired or wireless and do need a flat surface movements. So this arises to a question 'why mouse should be operated in flat surface.

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### III. PROPOSED METHOD

The proposed method of design was to make headway to eliminate Carpal Tunnel Syndrome by amending a technique in which Computer Mouse can be hold in palm of user rather by placing upon the table. As a result this technique helps to get obtain of old fashion of flat surface operation and evolve a minimalistic device. Also it has with both modes of behavior like joystick mode as well as gesture mode.

### IV. METHODOLOGY

#### A. SYSTEM DESIGN

In the first phase a transmitter(mouse) consist of a Arduino Nano, MPU6050, Joystick module and a 433Mhz RF transmitter module. The sensor's value is read by Arduino Nano and it sends the string which corresponds to sensor's value to the RF transmitter. On the receiver an Arduino Nano and a 433Mhz RF receiver is used. The RF receiver detects the transmitted signal and it feeds to the Arduino Nano. From this signal is accessed by the software phase.

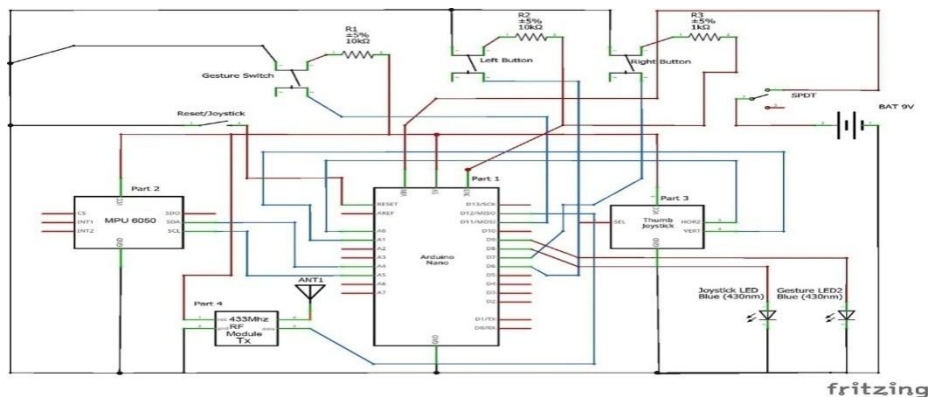


Fig. 1. Transmitter part

In the second phase the signal(string) from the Arduino Nano is accessed by a Mouse driver software. The mouse driver is the main functionality of the device. It is used to control the mouse cursor of the computer. It works by receiving the signal from serial port of the receiver and further process it by using a Python Module called "PYAUTOGUI". Mouse.exe has a speed slider bar with a range varying from 10 to 200. User can swap between Joystick and Gesture as their way of control.

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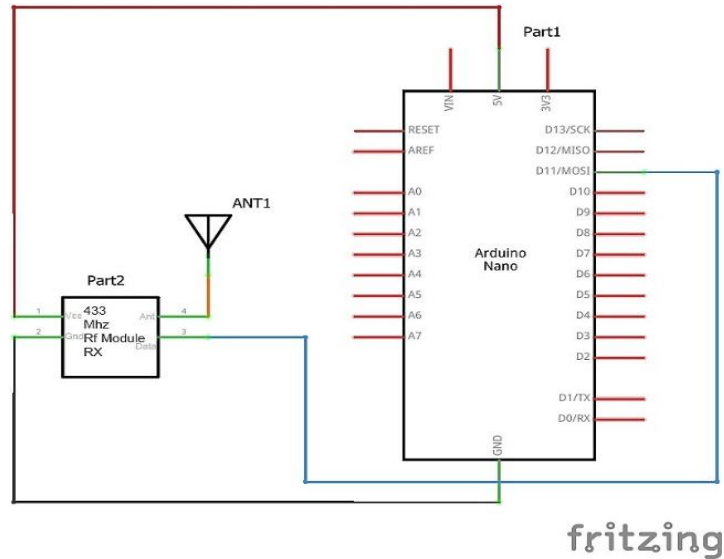


Fig. 2. Receiver part

## V. EXPERIMENTAL RESULT

The experimental setup has two parts one is transmitter and other is receiver. The body of device is simply a spectacle box. Transmitter part consists of Joystick push button, left and right buttons equivalent to a computer mouse. The special case of this experimental setup is that it can work on two modes. One mode runs on normal joystick mode and the other runs on moving or tilting the device as of in mobile gaming. This special mode is working on a built-in MPU 6050 sensor



Fig. 3. Hands on kit of Cordless Joystick (Transmitter)

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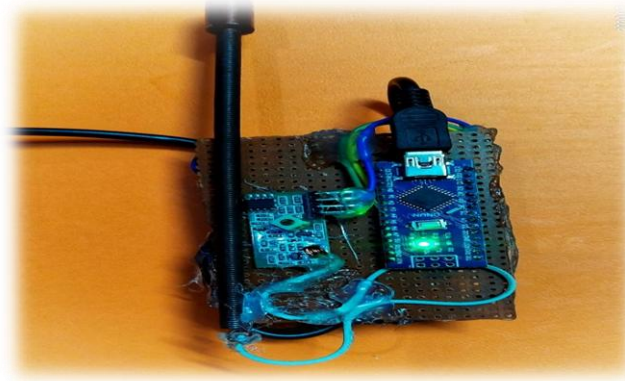


Fig 4. Hands on Kit of Cordless Joystick (Receiver)

The RF receiver will receive the data from transmitter and send it to the serial port of PC. In this setup, RF antenna, Arduino Nano are present. The Cordless Joystick is pretty useful as it eliminates using this on a flat surface which leads to Carpel tunnel syndrome which can be prevented.

## VI. CONCLUSION

Now a days the computer mouse technology is vastly improved and controlling device rather than computers like smart TV's, Large Screen, Projectors are made simple. From this project we can see the trends of wireless multifunctionality mouse. The three important vision of this project are to make a simple and low cost device, initiate air mouse concept and to eliminate Carpal tunnel syndrome.

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