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> Project Guidance (https://forum.arduino.cc/index.php?board=3.0) > (PARKINSONS DISEASE) mouse project!! (https://forum.arduino.cc/index.php?topic=613595.0)

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Topic: (PARKINSONS DISEASE) mouse project!! (Read 322 times)

SK8TER (https://forum.arduin o.cc/index.php? action=profile;u=8495 38)

(https://forum.arduino.c c/index.php? action=profile;u=849538)

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😠 **(PARKINSONS DISEASE) mouse project!! (https://forum.arduino.cc/index.php?topic=613595.msg4158935#msg4158935)**
May 02, 2019, 03:41 pm (https://forum.arduino.cc/index.php?topic=613595.msg4158935#msg4158935)

Hi

I'm trying to help my bother out who has Parkinson's disease which makes his had shake from side to side quite rapidly, he uses a computer for his job and is finding it increasingly difficult to hold the mouse still on an icon to click! He has software on his computer at home and work to help with this but he goes out to clients a lot and wanted something USB to take with him and just plug in .

I'm using a Leandro to emulate the mouse and a USB shield to plug a USB mouse into.

I can make the mouse work using USB_Host_Shield_2.0-master - HID - USBHIDBootMouse.

But I am not a great coder and can't get my head around how to filter out the constant left and right shake values to leave me with a steady value representing the middle, without introducing massive lag!

I can't find anything online the even starts me off to hack into something usable.

Any ideas would be much appreciated

pylon (https://forum.arduin o.cc/index.php? action=profile;u=9935 0)

(https://forum.arduino.c c/index.php? action=profile;u=99350)

⭐⭐⭐⭐
Shannon Member

Posts: 12,949

Karma: 679 [add] (https://forum.arduino.c c/index.php? action=karma;sa=applau d;uid=99350;e48bc6712b d=27cfafc0b294fa8c1f90 04ba2b260244)

Re: (PARKINSONS DISEASE) mouse project!! (https://forum.arduino.cc/index.php?topic=613595.msg4158957#msg4158957)
May 02, 2019, 04:10 pm (https://forum.arduino.cc/index.php?topic=613595.msg4158957#msg4158957)

#1

I guess you can do that with a running average of the values. But I don't know if the Leonardo has enough memory to do that without introducing a large delay. What are your expectations?

Post the code you're currently working with!

Paul___B (https://forum.arduin o.cc/index.php?

💡 **Re: (Parkinsons Disease) mouse project!! (https://forum.arduino.cc/index.php?topic=613595.msg4159486#msg4159486)**
May 03, 2019, 12:04 am (https://forum.arduino.cc/index.php?topic=613595.msg4159486#msg4159486)

#2

To perform a running average, you have a cyclic array of values. Once you have the accumulated sum for each step you have the index to the array; using that you subtract the oldest value and add the new value that you then replace in the array. Only one subtraction and one addition needed. Using a binary power number of elements, the necessary division is a simple bit shift, for 256 elements it is a byte shift.

Subject corrected - please correct the subject in your first post!

Re: (PARKINSONS DISEASE) mouse project!! (https://forum.arduino.cc/index.php?topic=613595.msg4159936#msg4159936)
May 03, 2019, 02:05 pm (https://forum.arduino.cc/index.php?topic=613595.msg4159936#msg4159936)   #3

My grandfather uses a touchpad instead. He moves the cursor to the location he wants, removes the finger and clicks the button. No risk of slipping as mouse often do. You may consider something like that.

How to insert images: https://forum.arduino.cc/index.php?topic=519037.0 (https://forum.arduino.cc/index.php?topic=519037.0)

Re: (PARKINSONS DISEASE) mouse project!! (https://forum.arduino.cc/index.php?topic=613595.msg4160262#msg4160262)
May 03, 2019, 07:58 pm (https://forum.arduino.cc/index.php?topic=613595.msg4160262#msg4160262)   Last Edit: May 03, 2019, 07:59 pm by
lastchancename   #4

I really like the OP's idea.
With the right backing, this could productised to a significant market opportunity. Include mouse-click jitters as well.

Good luck with your development.
If you have the opportunity, go file a cheap 'provisionsl' innovation patent application. Be fast.

(please don't start yapping on about patents!)

Experienced responders have a nose for laziness, (they were beginners once)... Sure, there are trolls, chest-beaters, and pretenders - but the help you'll get here is about as good as it gets - if you try to help youself!.

Re: (PARKINSONS DISEASE) mouse project!! (https://forum.arduino.cc/index.php?topic=613595.msg4160300#msg4160300)
May 03, 2019, 08:40 pm (https://forum.arduino.cc/index.php?topic=613595.msg4160300#msg4160300)   #5

Since the Parkinson's hand-shaking I've observed seems to have a particular frequency, I wonder if a notch filter or low-pass filter may help. A quick google indicates that a moving average has a notch at the sampling rate. Maybe there's a better way to implement a notch, but it's beyond my pay grade.   Would need to be tuned to each user's own frequency in a calibration process, and maybe updated on the fly if there is variation over time?

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luni64 (https://forum.arduino.cc/index.php?action=profile;u=839581)

(https://forum.arduino.cc/index.php?action=profile;u=839581)
☆
Newbie
Posts: 42

(https://luni64.github.io/Tee
Karma: 3 [add]
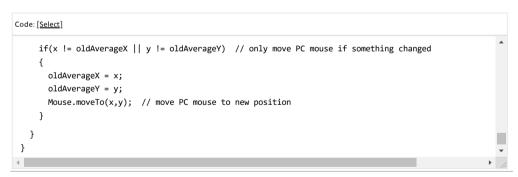(https://forum.arduino.cc/index.php?action=karma;sa=applaud;uid=839581;e48bc6712bd=27cfafc0b294fa8c1f9004ba2b260244)
https://luni64.github.io/TensyStep/
(https://luni64.github.io/TeensyStep/)

📎 Re: (PARKINSONS DISEASE) mouse project!! (https://forum.arduino.cc/index.php?topic=613595.msg4160419#msg4160419)   **#6**
May 03, 2019, 10:37 pm (https://forum.arduino.cc/index.php?topic=613595.msg4160419#msg4160419) Last Edit: May 03, 2019, 10:39 pm by luni64

Thats an interesting project. I did a quick feasibility with a Teensy 3.6 (https://www.pjrc.com/store/teensy36.html) which has a USB host built in.

Despite the rather simple approach it works nicely!
Please note: this is just a quick feasibility code for testing and giving you a head start. It definitely needs to be finished to get something working reliable.

Here the code Shouldn't be too difficult to port it to your board (or better: get a T3.6 😛)

Code: [Select]
```
    if(x != oldAverageX || y != oldAverageY)  // only move PC mouse if something changed
    {
      oldAverageX = x;
      oldAverageY = y;
      Mouse.moveTo(x,y);  // move PC mouse to new position
    }
  }
}
```

📎 mouse.PNG (https://forum.arduino.cc/index.php?action=dlattach;topic=613595.0;attach=306751)
1.06 MB
downloaded 148 times

Fast Stepper library? -> https://luni64.github.io/TeensyStep/ (https://luni64.github.io/TeensyStep/)

Paul___B (https://forum.arduino.cc/index.php?action=profile;u=193008)

(https://forum.arduino.c

💡 Re: (PARKINSONS DISEASE) mouse project!! (https://forum.arduino.cc/index.php?topic=613595.msg4160535#msg4160535)   **#7**
May 04, 2019, 12:52 am (https://forum.arduino.cc/index.php?topic=613595.msg4160535#msg4160535)

Quick and dirty it is!

Obviously if it works, it works if the hardware is fast enough to do unnecessary processing, but I did explain in #2 how to **properly** - efficiently - implement a moving average. 🙄

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