Heart Rate Video Game Controller

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Disclaimer

This adapter for a usb heart rate sensor is intended for educational and entertainment purposes only. It is not part of or a medical device.

Licencing

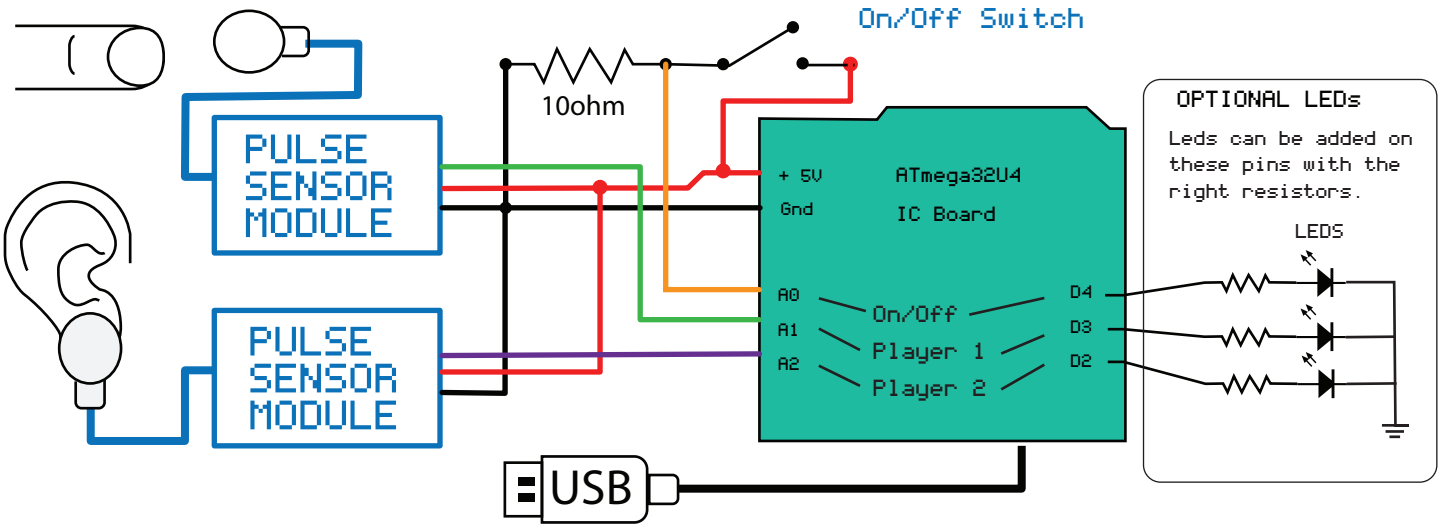
Project Summary

This project uses a pulse sensor to detect a heartbeat and translates it into a keyboard button press for use in video games. The sensor used sends a harmless infrared signal through your finger or earlobe and detects variation in blood flow. The Arduino Leonardo takes the signal and sends out a USB keyboard signal. Which will show up as a left or right arrow key being pressed on your computer. This will cause your text to move the cursor back or forward like pressing a keyboard arrow. Player 1 left key and Player 2 right key.

Games

The Chill Challenge - A relaxation game that takes the button presses from the controller, then calculates heart rate after a certain number of pulses. The game tests for variability in the heart rates taken.

Heart Beat to KeyBoard Button Press Wiring Diagram



Components list

- X 1 Arduino Leonardo (ATmega32U4 chip) IC Board
- X 1 or 2 Pulse Sensor Module - Grove-Ear-clip-Heart-Rate-Sensor
  Other pulse sensor maybe used but some code may need to be made.
- X 1 Switch or Potentiometer.
- X 1 10K ohm resistor
- X 3 LED and Resistors(Optional)

For Newbies

* A converter cable form 2mm male to 2.54mm male pins for the pulse sensor if you are using a breadboard.

*The Arduino IDE is used to add the code to the board it is suggested the loading some test code and trying a few projects before trying this on.

Load the Code

The code for one or two player versions can be found at:

https://github.com/MaxTayler/HeartGameController

Advanced

Changing Keys

The keyboard output can be changed for a personal project. Keep in mind that the key will be pressed when the sensor detects a signal this can mess up future IDE uploads and is the reason for the on/off switch.

Here is the link to the list of key codes for the arduino.

https://www.arduino.cc/reference/en/language/functions/usb/keyboard/keyboardmodifiers/

Adding a transistor to the sensor in the circuit. Can help with signal detection with some sensors. the resistors values may need to be changed depending on sensor or voltage. The signal threshold in the code may changes as well.