Hand Gesture Controlled Computer

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Motivation

- Leap motion controller:

  A optical hand tracking module that captures the movements of your hands

Concept

- Ultrasonic (US) sensors measure the distance between sensors and hands
- Based on this value of distance we will perform certain actions.
- **Media player**
- **Browser**
- **PPT**
- **Screen slide**

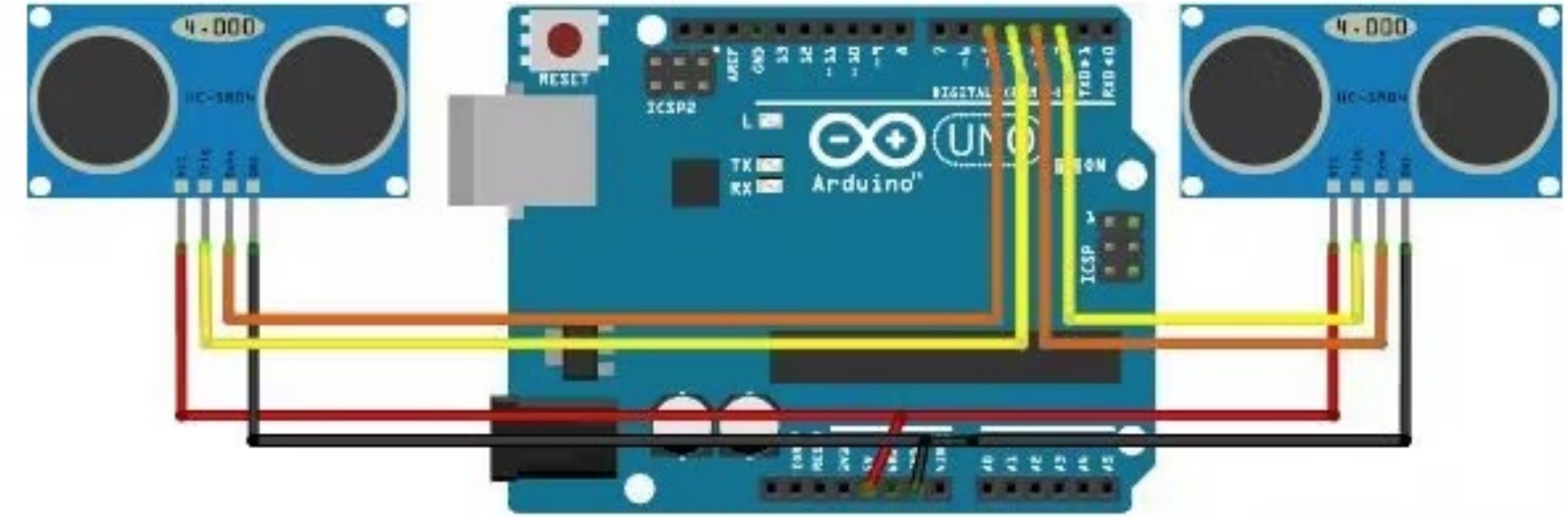
Ultrasonic Sensor - HC-SR04

Jumper wires

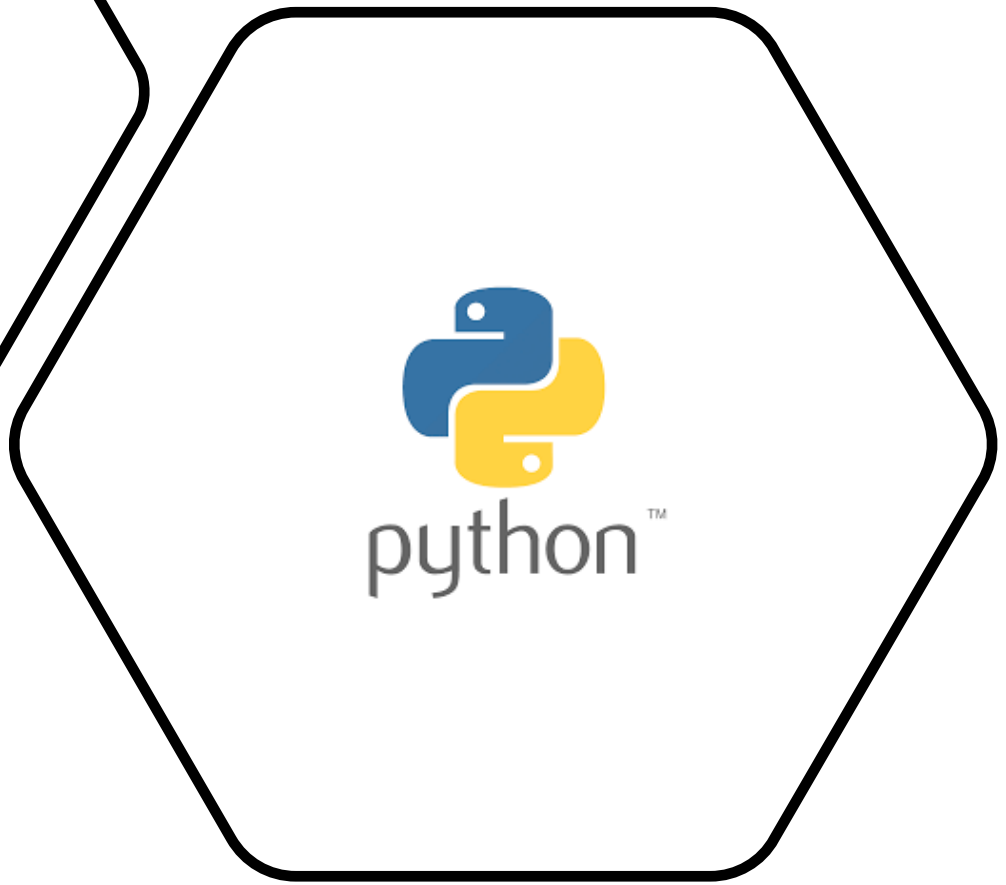
Arduino UNO

Hardware Components

Circuit Diagram



Software Components



- Arduino IDE -> Ultrasonic sensors measure the distance and send the message to python
- Python IDE -> Pyserial : Read the data from serial ports

  Pyautogui : perform actions on the computer

To be more specific …

Python 會抓取 Arduino serial monitor print出的關鍵字

再根據抓到的 keywords，執行 keyboard上的 hotkey

執行相對應的功能

Gestures (for media player)

'Play / Pause' : two hands in front of both Ultrasonic Sensor

'Rewind / Forward' : a hand in front of the right sensor

'Vup / Vdown' : a hand in front of the left sensor

'Play Next' : a hand in front of the right sensor and moving away

'Play Previous' : a hand in front of the left sensor and moving away

Gestures (for Browser)

- Pageup(到下一標籤頁)
- Pagedown(回到前一標籤頁)
- Scroll up (上滑網頁)
- Scroll down(下滑網頁)

Gestures (for PPT)

- 播放下一張投影片
- 播放前一張投影片

Demo

Future scope

- Customerized : By changing few lines of code, we could perform different kinds of action
- Combine the IR module to our model

  -> we could perform more action to our computers

Thanks for your attention