

# **Minor Project Report**

- Group – E (H.I.T.)

Batch:- 18<sup>th</sup> june 2018 ( ML )

## **Project Name - Hand Gesture Detection and Recognition for Human-Computer Interaction**

**Group Members:-**

**(work to be done)**

Abhishek Anand (leader)	- Module 1
Abhirup Roy	- Module 2
Ankit Kumar	- Module 3
Rahul Kumar	- Module 4
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### **Introduction :-**

In this project, we are going to learn how to build gesture-controlled laptops or computers. It is based on using the combination of Arduino and Python.

Instead of using a keyboard, mouse or joystick, we can use our hand gestures to control certain functions of a computer like to play/pause a video, move left/right in a photo slideshow, scroll up/down in a web page and many more. This is why I decided to control VLC Media Player as a hand gesture project.

The idea behind the project is quite easy by using two Ultrasonic Sensors (HC-SR04) with Arduino. We will place the two sensors on the top of a laptop screen and calculate the distance between the hand and the sensor. Counting on the information from

Arduino that is sent to Python through the serial port, this information will then be read by Python which is running on the computer in order to perform certain actions.

### **Hardware components:**

- Arduino
- Two Ultrasonic Sensors (HC-SR04)
- Some wires

### **Software apps:**

- Arduino IDE
- Python IDLE
- PySerial library (We will use to communicate with serial ports)
- PyAutogui library (We will use to perform actions)

### **The following are the 5 modules hand gestures that I've programmed for demonstration purposes:-**

- 1<sup>st</sup> module : It allows us to 'Play/Pause' VLC by placing the two hands in front of the right/left Ultrasonic Sensor at a particular far distance.
- 2<sup>nd</sup> module : It allows us to 'Rewind' the video by placing a hand in front of the left sensor at a particular far distance.
- 3<sup>rd</sup> module : It allows us to 'Forward' the video by placing a hand in front of the right sensor at a particular far distance.
- 4<sup>th</sup> module : It allows us to 'Increase Volume' of the video by placing a hand in front of the left sensor at a particular far distance and moving away from the Sensor.
- 5<sup>th</sup> module : It allows us to 'Decrease Volume' of the video by placing a hand in front of the left sensor at a particular far distance and get near to the sensor.