**MINI PROJECT – I**

**(2019-20)**

**HAND GESTURE CONTROL OF COMPUTER USING**

**ARDUINO**

**SYNOPSIS**



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**About the Project:**

Humans interact in the physical world by the means of the five senses. However, gestures have been an important means of communication in the physical world from ancient times, even before the invention of any language. In this era of machines taking control of every complex works, interactions with machines have become more important than ever. Since this paper deals with gesture controlled laptop, the primary focus will be on the use of hand gestures for specific applications only.

There are several ways to capture a human gesture that a computer would be able to recognize. The gesture can be captured using distance measurement, camera, or a data glove. Gestures can also be captured via Bluetooth or infrared waves, Acoustic, Tactile, optical or motion technological means. The embedded systems designed for specific control functions can be optimized to reduce the size and cost of the device and increase the reliability and performance.

This project consists of mainly three components – Arduino Uno, Ultrasonic sensors, and a laptop. The ultrasonic sensors hooked to the Arduino are used to determine the gestures and the distance of the hand from the ultrasonic sensors. The code loaded in Arduino finds the respective keyword for the distance found and sends it to Windows OS. Python code that runs in the background recognizes the keywords and generates the corresponding virtual

**Motivation:**

The purpose of gesture recognition in Computers has always been the minimization of the distance between the physical world and the digital world. The way humans interact among themselves could be implemented in communication with the digital world by interpreting gestures via mathematical algorithm. Numerous ways and algorithms have been proposed and implemented to achieve the goal of gesture recognition and its use in communicating with the digital world. Gestures can be tracked using hand movements, accelerometers and more

**Future Prospects:**

It can be updated in future and then the full computer will be control by gestures. It can minimize the usage of keyboard and also it can minimize human effort

**Requirements:**

**Hardware Requirements:**

* Arduino UNO x 1
* Ultrasonic Sensors x 2
* USB Cable (for Arduino)
* Few Connecting Wires
* A Laptop with internet connection

**Software Requirements:**

* Arduino IDE
* Python IDE