Gesture-Controlled-PC-Using-Arduino-and-Python

Introduction

Gesture-controlled laptops and computers are all the rage these days, but they can be quite expensive. That's why I decided to build my own using Arduino and Python!

Using two ultrasonic sensors to determine the position of my hand, I was able to control a media player (VLC) based on the position. The technique, known as Leap motion, allows me to control certain functions on my laptop simply by waving my hand in front of it.

Working

The concept behind my project is simple yet powerful - using Ultrasonic sensors and Arduino to create a gesture-controlled laptop or computer. By placing two Ultrasonic sensors on top of the monitor and measuring the distance between the monitor and our hand, we can perform certain actions based on the distance value.

To perform actions on the computer, we utilize the ***pyautogui*** library in Python. The commands from Arduino are sent to the computer through the serial port (USB), where Python running on the computer reads the data and performs an action based on the read data.

By reading the value of distance using Ultrasonic sensors, we can control certain actions with gestures. In this project, I programmed three demo actions:

Action 1: When both hands are placed up before the sensor at a particular far distance, the video in VLC player will play/pause.

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Action 2: When the right hand is placed up before the sensor at a particular near distance and then moved towards the sensor, the video will fast forward, and if moved away, the video will rewind.

Action 3: When the left hand is placed up before the sensor at a particular near distance and then moved towards the sensor, the volume of the video will increase, and if moved away, the volume will decrease.

Conclusion

This gesture-controlled laptop or computer project using Arduino and Python is a great example of how we can leverage the power of technology to create innovative solutions that are not only fun and cool to use, but also accessible and customizable.

By using Ultrasonic sensors to measure the distance between our hand and the monitor and Python **pyautogui** library to control actions on our computer, we were able to create a fully functional system that can play/pause, fast forward, rewind, and adjust volume in a media player (VLC) using just our hand gestures.

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