Gesture based Music

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Project Aim

Using Hand gesture to produce music

Project description:

- **Raspberry Pi 3:** It is a third-generation, single-board computer. It contains a 64-bit quad-core processor. The clock speed is 1.5 GHz. An external micro SD card provides memory to Raspberry Pi. You can give instructions using the Raspbian OS.
- **Raspbian OS:** It is similar to Windows or Ubuntu OS. You can code the Raspberry Pi using Python in the Raspbian OS. It is user-friendly and allows multi-tasking.
- **Accelerometer sensor:** It is a device used to measure the acceleration. You will use it to detect the hand gestures.
- **Gyroscope sensor:** It is a device that measures rotational motion. You will use it to understand the orientation of the hand.
- **Sonic Pi:** It is a music creation tool based on coding. You can code the system to play music based on hand gestures.

Approach

1. Place accelerometer sensors on various parts of a hand glove. For example, fingers, palm, wrist, arm.Place the gyroscope sensors also. Make sure you place them near the accelerometer sensors.
2. Interface the sensors with the Raspberry Pi using appropriate wires.
3. Open the Raspbian OS on your PC/laptop.Use Sonic Pi for coding. The sensors will give input to the Raspberry Pi.
4. Read the input to detect a particular hand gesture. Once a gesture is confirmed, associate a particular sound with it.Let us say we want to play drum sound. Detect the hand gestures that are used in drums. Now associate a particular sound with a particular gesture.
5. Try to add as many sounds as possible.
6. Finally, try to compose music using only hand gestures.