Computer Music Controller Based On Hand Gestures Recognition Through Web-cam

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Our project is based on Mac computer, so we will not use a Droid camera phone.

Goal

The goal of this project is to build an desktop application which enables control of playback of music and videos via the web-cam incorporated in most laptops by gesture recognition. It is convenient and enjoyable for people to get rid of keyboard and mouse when they are controlling their iTunes or other multi-media players. This little app will help people while multi-tasking and demonstrates a great potential of using built-in web-cam for a host of gesture-based controls. We are to explore hand gestures recognition algorithm on Mac computers.

Work task

(1) Develop a "detection mode" interface in which continuously capturing a proper length of video frames through web-cam. (2) By designed analysis in Matlab, extract the motion track of user's hands from the video frames captured. Along the way, we will work on recognition algorithms implementation, including hands distance detection, hands skin detection, hands shape detection, and hands movement tracking. (3) During post-processing, we will design a series of signatures of hand motion patterns. Then according to these signatures, different functionalities of the current music player will be triggered. All the work will be done by programming via Matlab image processing toolbox.

Reference

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