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

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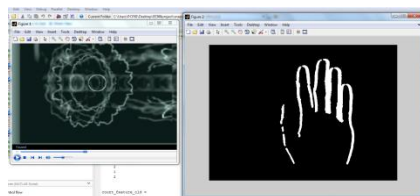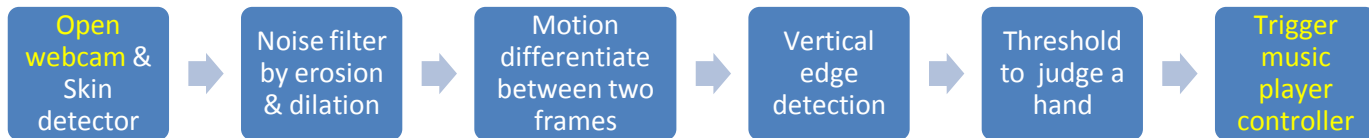### Department of Electrical Engineering, Stanford

## Goal

• Inspired by "Flutter" app on iMac computer
• Real-time music controller based on hand gesture via webcam
• Detect hand, recognize gesture, and control music player
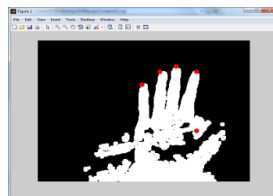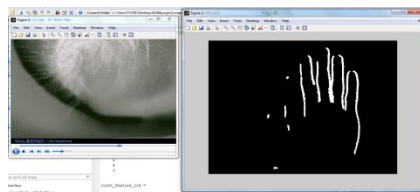• Get rid of keyboard & mouse, enjoy music



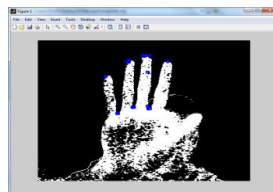*Look familiar to you?*

## Algorithm and work flow

Open webcam & Skin detector → Noise filter by erosion & dilation → Motion differentiate between two frames → Vertical edge detection → Threshold to judge a hand → Trigger music player controller

## Experimental results


Music player Pause


Fingertips detection


Music player Play


Corner points detection

• Hand detection rate is 80% from three samples of different hand color volunteers.
• Average trigger response lagging time is 2.4s.
• Function to play and pause the music Is working well.
• Light condition and placement of hand may have some effect on our application's performance
• Movement tracking is not accurate enough, so we remove the function to go "next" song or go "pre" song.