MiSCon: A Hot Plugging Tool for Real-time Motion-based System Control

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Abstract

In this demonstration, we proposed a hot plugging tool for the real-time motion-based system control, which is more portable and application-independent than the existing commercial motion-based sensing devices such as Kinect, Wii and PlayStation Move. This tool captures and recognizes people's real-time motions through the built-in camera of PCs, mobile phones or tablets, and automatically executes the system events which have been mapped with people's customized body motion, e.g., the head and the fist. The tool relieves people from the conventional ways to play games and use applications, and enables them to customize their preferred ways to control the systems.

Overview

Basic Idea:

Associate system events with body movements like head, fist, palm to enable real-time motion-based system control.

Techniques:

- ✓ Camera filming/sampling.
- ✓ Face/Fist/Palm detection.
- ✓ Trajectory generation/matching.

Features:

- ✓ Hot Plutting – App independent
- ✓ Device Free – different from Kinect/Wii/PlayStation Move
- ✓ Cost Free

Applications:

- ✓ Games of the first person perspective
- ✓ Slideshow
- ✓ Other apps concerning keyboard/mouse events

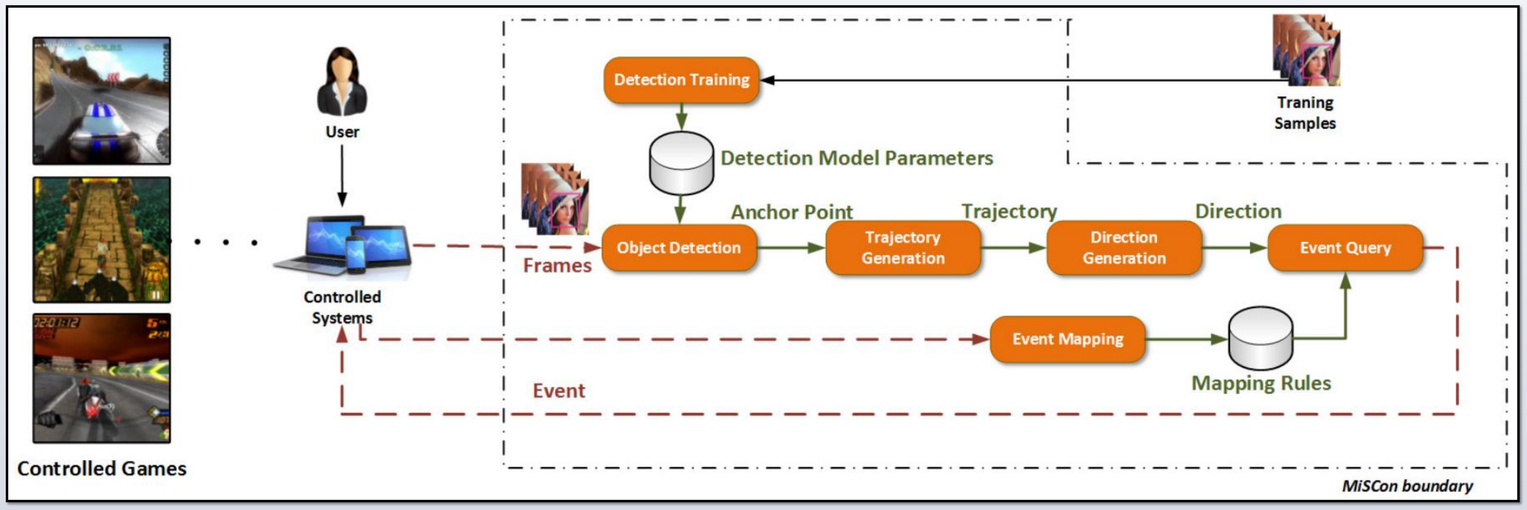

Fig.1 The workflow of MiSCon contains: (0) event recording and mapping; (1) face/fist/palm detection with pre-trained models; (2) anchor point identification; (3) trajectory (direction) generation; (4) trajectory (direction) mapping; (5) trigger events.

Demonstration

Fig.2 Head control with MiSCon.

Fig.3 Fist control with MiSCon.

MiSCon enables users to easily control the games on their laptop through the webcams with their heads and fists, e.g. motorcycle / car racing games as illustrated. The system response is fast and the control type is flexible, thus, MiSCon is very user-friendly and of high usability.

Configuration

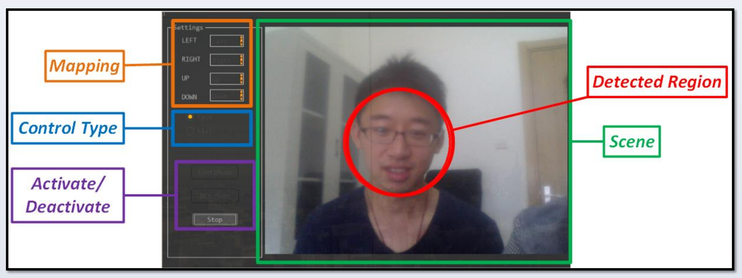

Fig.4 Configuration Frame.

Within the configuration frame of MiSCon, users are allowed to:

(1) Map different system events to the major movements (directions);

(2) Select control type (head/fist);

(3) Activate/Deactivate MiSCon;

(4) See the detected target (head/fist, in red circle).