Abstract and System configuration of Kadai team

1. Introduction

Keyboard and Mouse are typical devices in Human ï Computer Interaction (HCI). They are accurate, easy-to-use and familiar to almost every computer users. However, keyboard and mouse ñattachò people to their computers, indirectly make the use of computers boring.

Gestures Based HCI is an approach to overcome the problem. In this kind of interaction, computer tracks human gestures and interprets them into machine commands.

Horse Archery is a 3D game operated by the Gestures Based HCI approach. In this game, players will control a horsed-archer by using their own hands and bodyôs gestures instead of keyboard and/or mouse.

2. System descriptions

Horse Archery uses 2 infrared (IR) cameras, several IR LEDs and a vibration sensor to track player's movements. In order to interact with the system, game players wear a pair of LEDs-attached gloves and a vibration sensor.

Our system operates as follows. (see Fig.1 for system setup overview)

A. Player's hands control the bow

Signals from IR LEDs (including LEDs positions, visibilities) are captured by two cameras. Those data are analyzed by the computer and then converted to game character's actions (draw the bow, aim and shoot arrows).

B. Run through the game

The players run at a specific spot in order to move the character. While running, his/her body shakes at different levels (depends on the running speed) and creates vibrations tracked by the vibration sensor. This is how the computer determines the level of speed to be assigned to the character.

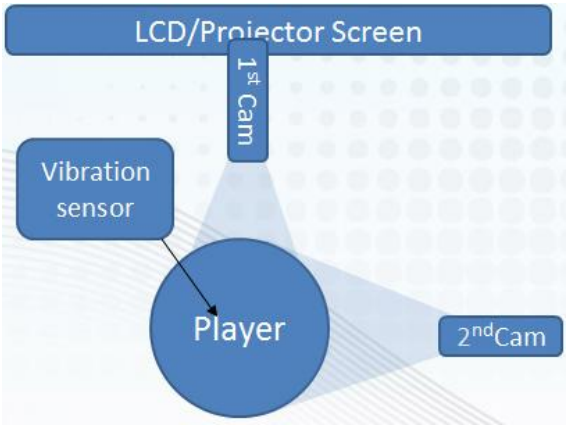

Fig.1 Overview of "Horse Archery" system

3. Conclusions

Our system provides users a comfortable and interesting way to interact with the computer (demonstrated by a sporty video game). This system can be extended to be used in numerous different aspects.