1. Motivation

Google street-view service provides panoramic images by which users could view the surrounding scenes along the streets. In this study, a virtual traveling system is developed based on the 'Google Earth' platform and the commands are identified using the Kinet input device. People explore the world from the Internet virtually in natural interaction. In addition, they can take a picture and record the video during the journey.

2. System Architecture

The traveling system consists of two modules: the action identification(AI) and the scenery exploration(SE) modules as shown in Fig. 1.

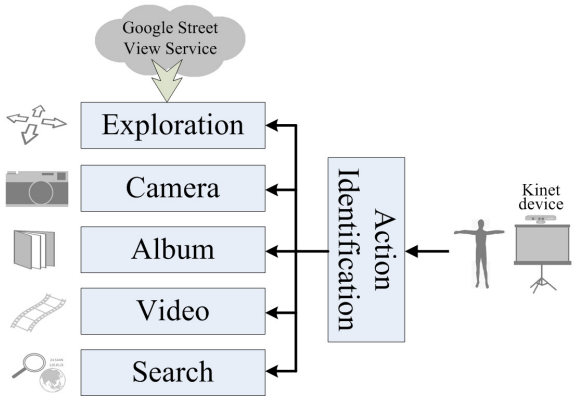

Fig. 1: System Architecture

2.1 Action Identification (AI) module

An RBG color image and a depth-based sensor image are extracted for action identification. The identification rules are designed using the 15 joint coordinate features of human body. Eleven actions, six hand gestures and five body postures, are classified by using the relationship among these 15 joint features.

2.2 Scenery Exploration (SE) module

The APIs of Google street view service can move the street views free in SE. Human objects are segmented from the color images and are embedded in the street images. Furthermore, a video is obtained from the continuously grabbed human objects and the serial street images for the complete remembrance.

2.3 System Flowchart

Users stand at the frontal of a projected screen. Kinet device identifies the human postures, or action instead of the mouse-based or keyboard-based inputs. Using the Kinet-based commands, users see the scene free by the Google street-view service as shown in Fig. 2. In addition, they can take a picture or record a video for remembrance.

3. System functions

Five functions are developed in this system:

1) **Exploration:** Users exhibit four postures to move forward, move backward, turn left, or turn right. Using them, users move free in the Google street view service.

2) **Camera:** When two hands applaud, the system will count down in 5 seconds. Users can exhibit any pose to take a picture.

3) **Album:** Users browse and manage the album using the gesture commands.

4) **Video:** The system like a private cameraman records the complete journey using videos.

5) **Search:** The system jumps to the chosen high spot to begin the exploration.

Fig. 2: System Implementation