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A Study on Device Control for Multimedia Network System

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Recently computer network technologies have been developed so that video and audio data can be handled and several kinds of multimedia applications can be utilized easily on such networks. Consumer AV devices have been digitalized in order that they could be connected to computers. However, there still exist some differences between computers and consumer devices concerning device control system.

This research aims to design the method for utilizing computer systems from consumer AV devices. Here, a DV device and a VOD (Video on Demand) server are taken up as a consumer AV device and a computer system, respectively. The method provides VOD services to the DV device, i.e., users can use the VOD server as a virtual DV device.

Streaming video services such as RealVideo and QuickTime have been recently attracting attention. These services are a kind of VOD that users can operate those applications on a GUI (Graphical User Interface), like a VCR (Video Cassette Recorder) which is familiar to them and can be operated intuitively.

AV devices are mutually connected when the contents must be edited. Several kinds of interfaces such as LANC, ViSCA, Control-S, and IEEE1394 are used for this connection. These ports can be also applied for connection to computers. Generally, while it is possible to control AV devices from computer systems, AV devices have not been able to control computer systems.

To control a VOD server from AV devices, control commands must be translated. Assuming that the control protocols for an AV devices and a VOD server are IEEE1394 AV/C (AV Control) and RTSP (Real-Time Streaming Protocol) server respectively, a system which translates AV/C commands into RTSP is required. When these systems are used on computer networks, video channels and control channels must be established separately.

From these reasons, this research proposes that a VOD control management server should be installed in the JAIST VideoLAN. In the proposed system, a session is defined as a series of transactions for a service from the beginning to the end, and connection management during one session is handled. Translation of the control commands is also included in the system.

Control is managed in the same way as the management system for DSM-CC U-N protocol. The concept of 'session' is quite useful especially for interactive network services such as VOD.

At the last stage of the research, the translation of control commands is simulated. A PC which fully equips all AV/C commands transmits AV/C commands. The PC has a GUI which looks like VCR interface. The AV/C commands are translated into RTSP commands by the translation system which is implemented on another PC, and are delivered to the VOD server. In this simulation, the PC is assumed to be an AV device.

Implementation and evaluation of the proposed system are remained as the future works.