

MASTER'S THESIS

Priority feedback mechanism with quality of service control for MPEG video system

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**Priority Feedback Mechanism with Quality of Service Control
for MPEG Video System**

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Abstract

The remarkable increase in computer power, the high compression video coding technique (MPEG), and the expansion in network bandwidth have brought the desktop real-time video system to a new era. In view of these, we have developed a Distributed Real-time MPEG Video System on top of the Windows platform.

Transmitting real-time MPEG data across the Internet is complex and dynamic. The Internet is a shared medium and the limited bandwidth cause unpredictable and fluctuating transmission rate for real-time data transmission. Since video frames in MPEG are inter-dependent, the video system is restricted to skip frame(s) randomly in order to synchronize the playback and to be adapted to the available bandwidth and delay latency. Moreover, with different clients requesting different levels of Quality of Service (QoS), the video system becomes more and more complex.

We define the QoS as the number of frames displayed on time, and we pre-define the skipped frame pattern according to the constraints of the inter-dependence features of the MPEG video. We propose the Priority Feedback Mechanism with QoS Control (PFB-QoS), which is divided into 2 parts. Firstly, the QoS Control Mechanism (QoS-Control) is used to monitor the frames' latency and available bandwidth. It can change the skip frame pattern in order to adapt to the current latency and available bandwidth. Secondly, the Priority Feedback Mechanism (PFB) enables the client to feedback the current status and priority to the server, where the server pre-empts the lower priority client and serves the highest priority client first.

According to the experimental results, frame utilization is increased and playback is synchronized for the system with QoS-Control. Furthermore, when PFB is enabled, the QoS stabilization is significantly increased compared to the system that only has the QoS-Control.

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