多源信息融合专刊

一种联合速率控制和缓冲管理的VBR视频鲁棒传输方法

张源海, 李凯慧, 许长桥, 孙利民

1. Institute of Software, Chinese Academy of Sciences, Beijing 100080, P.R. China

2. Gruaduate University of Chinese Academy of Sciences, Beijing 100039, P.R. China

摘要

In this paper we present an adaptive video transmission framework that integrates rate allocation and buffer control at the source with the playback adjustment mechanism at the receiver. A transmission rate is determined by a rate allocation algorithm which uses the program clock reference (PCR) embedded in the video streams to regulate the transmission rate in a refined way. The server side also maintains multiple buffers for packets of different importance levels to trade off random loss for controlled loss according to the source buffer size, the visual impact, and the playback deadline. An over-boundary playback adjustment mechanism based on proportional-integra (PI) controller is adopted at the receiver to maximize the visual quality of the displayed video according to the overall loss and the receiver buffer occupancy. The performance of our proposed framework is evaluated in terms of peak signal-to-noise ratio (PSNR) in the simulations, and the simulation results demonstrate the improvement of the average PSNR values as well as the better quality of the decoded frames.

关键词　Variable-bit-rate (VBR)　video streaming　program clock reference (PCR)　buffer management

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Joint Rate Allocation and Buffer Management for Robust Transmission of VBR Video

ZHANG Yuan-Hai, LI Kai-Hui, XU Chang-Qiao, SUN Li-Min
1. Institute of Software, Chinese

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