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端到端MPEG-4 FGS视频TCP友好的平滑传输

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Abstract
This paper presents the design of an end-to-end adaptive smoothing and TCP-friendly transmission for stored MPEG-4 fine-grained scalable (FGS) videos over the best-effort Internet. The goal is to minimize the playback quality variation when the network conditions are constantly varying. A novel framework for FGS video delivery over a TCP-friendly connection is first presented. In the context of this scheme, and under the assumption of complete knowledge of bandwidth evolution, an offline quality adaptive smoothing algorithm is derived, and an online adaptive smoothing algorithm is also developed based on the predicted available bandwidth to stream FGS video over the TCP-friendly rate control (TFRC) Protocol with the enhanced ARAR model. Through simulation experiments, it has been shown that the online adaptive algorithm performs almost as well as the offline version for a wide-range of the bandwidth scenarios, and a smooth and TCP-friendly video transfer can be accomplished by the proposed scheme.

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摘要
着重研究了Internet上MPEG-4 FGS(fine grained scalable)视频流的自适应平滑传输,其主要目的在于,在网络带宽变化的情况下,提供稳定的视频回放质量.提出了一种新的基于TFRC(TCP-friendly rate control)的MPEG-4 FGS端到端视频流传输系统框架,在此框架的基础上,首先假设完整的可用带宽变化已知,并且提出了一种离线的自适应平滑算法.此后,给出一种基于改进的ARAR(autoregressive autoregressive)预测技术的在线自适应平滑算法.最后,以NS-2为实验平台进行了模拟实验.模拟实验表明,提出的离线和在线自适应平滑算法可以充分利用可用网络带宽,并且

能够在可用网络带宽持续波动的情况下保证接收方的回放尽可能地平稳,从而达到获得最佳视觉效果的目的.

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