西安电子科技大学学报 2007 34 (3): 354-359 ISSN: 1001-2400 CN: 61-1076/TN

基于场景模型的联合信源信道编码的视频网络传输

孔繁锵, 肖嵩, 周有喜

(西安电子科技大学 综合业务网理论及关键技术国家重点实验室，陕西 西安 710071)

收稿日期 修回日期 网络版发布日期 2007-5-31 接受日期

摘要 提出了一种基于场景统计模型的联合信源信道编码和网络拥塞控制的无线视频网络传输系统. 采用MPEG-4分级编码将所有的层划分成几类，由码流对网络拥塞和重建视频质量的影响将其分成几个传输优先级队列，并对其进行不等差错保护. 在传输过程中，依据网络状态反馈信息进行自适应的联合信源信道码率分配优化. 实验数据表明，该方案对不同特性码流提供较好的保护，针对不同无线网络条件具有较好的适应性，能够明显地提高重建视频质量.

关键词 场景模型 分级编码 不等差错保护 不等丢包保护 联合信源信道编码

分类号 TN919.81

Video network transmission of joint source-channel coded based on scene modeling

KONG Fan-qiang,XIAO Song,ZHOU You-xi

(State Key Lab. of Integrated Service Networks, Xidian Univ., Xi′an 710071， China)

Abstract

A new method for combining source channel coding with source modeling and network congestion control for reliable video transmission over a wireless network is proposed. Based on the scene modeling and characteristic analysis, all layers encoded by MPEG-4 scalable coding are first classified into several types. Second, unequal loss protection and unequal error protection of queues are made according to their contribution to the quality of reconstructed video. Then the network congestion control strategy is adjusted according to different packet loss rates, and the rates between source coding and channel coding are dynamically adjusted according to BER in wireless channel. Finally, the experimental results show that the proposed scheme can achieve better performance compared with conventional schemes under various wireless network conditions.

Key words scene modeling scalable coding unequal error protection unequal loss protection joint source-channel coding

DOI:

通讯作者