

论文

基于VBR视频流量预测的动态带宽分配滞回算法

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摘要

研究表明VBR视频流量具有较强的长时相关性和突发性, 该文利用高阶自回归过程预测其流量, 并进行概率分布转换, 同时提出了一种新的动态带宽分配算法—滞回算法, 与Chiruvolu(1998)提出的门限算法, 及Iraqi(1999)提出的基于GOP场景检测的带宽分配方案相比, 对缓存尺寸的需求、信元丢失率等性能有明显提高。仿真表明, 该算法能够以较低的开销(带宽重分配次数百分比 $\leq 2\%$)同时兼顾了信元丢失率和带宽利用率, 而且只有在缓存队长超过迂回门限时才触发带宽重分配过程, 有利于在线实现。

关键词 [VBR视频流量预测](#) [尾部概率分布](#) [动态带宽分配](#) [滞回算法](#) [信元丢失率](#)

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A Hysteresis Algorithm for Dynamic Bandwidth Allocation Based on VBR Video Traffic Prediction

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Abstract

With lots of studies, it is admitted that the variable bit rate video traffic exhibits high long range dependence and burstness. Its traffic is predicted by auto-regressive process with high order in this paper while the probability distribution of traffic predicted is also transformed to that of real situation. And then a new dynamic bandwidth allocation algorithm named hysteresis algorithm is presented, by which performances of buffer size requirement and cell loss rate are both improved significantly compared with threshold algorithm presented by Chiruvolu (1998) and allocation scheme based on group of pictures scene detection presented by Iraqi (1999). The proposed algorithm gives attention to both cell loss rate and utilization at the considerate low cost (reallocation frequency $\leq 2\%$) according to a number of simulations. And the bandwidth reallocation process is only triggered when the queuing length of buffer surpasses the roundabout threshold so that it is easy for online realization.

Key words [VBR video traffic prediction](#) [Tail of probability distribution](#) [Dynamic bandwidth allocation](#) [Hysteresis algorithm](#) [Cell Loss Rate \(CLR\)](#)

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