VARIABLE TIME−SCALE STREAMING FOR MULTIMEDIA TRANSMISSION OVER IP NETWORKS (WedPmOR6)

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Abstract :

This paper presents an analysis of a rate adaptive multimedia streaming technique according to which rate changes are obtained by varying the inter−packet transmission interval, rather than altering the source coding rate. Instead of constraining the transmitter to operate in real−time, the time scale of the proposed packet scheduler can vary between zero when the network is congested, to as faster than real−time as the channel bandwidth allows when the network is lightly loaded. Simulation results comparing a TCP−friendly test implementation of the variable time−scale streaming (VTSS) approach with an ideal source rate−adaptive technique − whose performance represents the upper bound of any transmission system based on source rate adaptation − show that the VTSS approach delivers higher perceptual quality (up to 1.2 dB PSNR in the considered scenario) and reduced quality fluctuations, for a wide range of standard video sequences. The gains are even more pronounced when the proposed technique is compared to constant bit−rate transmission.

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