

Arbitration by Selective Removal of Temporally Dependent Redundancies

Mercy Mbise, John C. Woods

Abstract

This paper examines the transmission of real-time video and still images over the same medium, and presents an arbitration mechanism for efficient transfer of bulky data in the presence of scarce resources, by intelligently compromising the video stream. The arbitration selectively removes video packets based on the observation that if an intra-coded packet is lost, its dependants will not enhance the video but actually degrade it. The identification of this event permits them to be discarded thus freeing up resources at the expense of reduced temporal rate. This principle is also true for packets exceeding the end-to-end delay requirement and it can also be applied towards the end of scenes where information content is low. The freeing of resources improves the mean buffer occupancy; therefore losses and delay are reduced. A series of simulations are conducted to illustrate these points.

Keywords: multimedia systems;quality of service;real-time systems;video coding;arbitration mechanism;delay;end-to-end delay requirement;information content;mean buffer occupancy;multimedia;quality of service;real-time video transmission;simulations;still images;temporally dependent redundancy removal;video coding;video packets;video stream.