Online Priority Aware streaming framework for Cognitive Radio Sensor Networks

Abstract:

Due to the bursty nature of video traffic, streaming video in traditional Wireless Sensor Networks (WSN) is usually faced with distortion largely as a result of packet loss. Although the bandwidth aggregation characteristic of Cognitive Radio Sensor Networks promises to cushion this effect, this method will not be much different with the strategy of increasing throughput as has been employed in traditional WSN. Thus, the problem is yet to be properly addressed. More so, the fact that the most important of video frames (I-Frames) constitute more than half the streaming data (in low-motion streams) increases the possibility of distortion, which cannot be mitigated by solely increasing throughput. Online Priority Aware (OPRA) Streaming provides a detailed and simple framework for effective streaming that brings the important end-to-end distortion metrics to bear, directly on the in-network processing nodes. The algorithm selectively drops packets in the in-network processing nodes to maximize a defined Local Quality Index in order to protect end-to-end quality of experience (QoE). Preliminary results show its simplicity, its ability to deliver more QoE high priority packets to the sink and the satisfactory effects of the incurred overhead.

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