

## MITIGATING THE EFFECT OF PACKET LOSSES ON REAL-TIME VIDEO STREAMING USING PSNR AS VIDEO QUALITY ASSESSMENT METRIC

**Anietie Basse, Kufre M. Udofia & Mfonobong C. Uko**

Department of Electrical/Electronic  
& Computer Engineering, University of Uyo, Uyo  
**NIGERIA**

### ABSTRACT

Real-time video streaming refers to content delivered live over the Internet. It requires a form of source media (e.g. a video camera, an audio interface, screen capture software), an encoder to digitize the content, a media publisher, and a content delivery network to distribute and deliver the content. Real-time video streaming (live streaming) is complicated due to a number of factors including bandwidth, jitter, and packet losses as well as many additional issues such as how to fairly share the network resources amongst many flows and how to efficiently perform multicast (one-to-many) communication for popular content. In our previous paper, we proposed an Adaptive Media Play-out (AMP) algorithm and a mathematical model to reliably transmit packets, while reducing jitter and improving video quality at the receiving end. The proposed AMP algorithm and model enabled a valuable trade-off between quality of service (QoS) parameters and received video quality. Through simulation experiments, the performance of the AMP was compared with the existing technique of buffering - on the basis of that research, it was found that the AMP algorithm outperforms buffering to a large extent. In this paper, we use the peak signal-to-noise ratio (PSNR) as video quality assessment metric to mitigate packet losses on real-time video streaming. We have shown that by using the PSNR as the video quality assessment parameter, the effect of packet loss on real-time video streaming over the internet can be mitigated. The video frame rates for the PSNR analysis were compressed at 15, 20, 25, 27, 28, 29 and 30fps respectively. The result of our analysis shows that the higher the average frame rate received, the higher the PSNR, the lower the loss rate, and the better the video quality.

**Keywords:** Packet loss, Real-time video streaming, PSNR.