ON THE EFFECTS OF ENCODER−DECODER CONCEALMENT MISMATCH ON VIDEO DISTORTION ESTIMATION (WedPmOR10)

Author(s) :

Fabio De Vito (Politecnico di Torino, Italy)
Juan Carlos De Martin (IEIIT−CNR, Italy)

Abstract :

Many advanced video transmission techniques rely on per−packet distortion estimates. To compute reliable estimates, however, the decoder inner workings, including the concealment module used in case of packet losses, should be fully known at the encoder. This paper explores the effects on video distortion estimation of encoder−side erroneous assumptions about the concealment technique used by the decoder. Several concealment techniques, roughly representative of the main families of concealment algorithms (i.e., spatial, temporal and hybrid), have been implemented and then distortion has been evaluated at the encoder using an analysis−by−synthesis approach for all possible combinations of encoder−decoder concealment pairs. The results for nine, widely known, test video sequences show that as long as the encoder concealment algorithm belongs to the same family of the decoder one, the effect of concealment mismatch on distortion estimation is quite small. The results have also been validated by measuring the effects of suboptimal distortion estimation on packet classification for video transmission on a 2−class DiffServ IP network.
[continued on the next page]

ON THE EFFECTS OF ENCODER−DECODER CONCEALMENT MISMATCH ON VIDEO DISTORTION ESTIMATION (WedPmOR10)

* Author(s) :	Fabio De Vito	(Politecnico di Torino, Italy)
	Juan Carlos De Martin	(IEIIT−CNR, Italy)

* Abstract : (cont.)	Simulations results show that, for intra−family concealment mismatch, packet misclassifications affect only 1−−5 % of the packets, yielding, on average, perceptually variations of only about 0.2 dB PSNR.