STANDARD COMPATIBLE ERROR CORRECTION FOR MULTIMEDIA TRANSMISSIONS OVER 802.11 WLAN (FriAmPO1)

Author(s):
Enrico Masala (Politecnico di Torino, Italy)
Antonio Servetti (Politecnico di Torino, Italy)
Juan Carlos De Martin (IEIIT−CNR, Italy)

Abstract:
In this paper, we analyze a standard compatible error correction technique for multimedia transmissions over 802.11 WLANs that exploits, when available, the information of previous erroneous transmissions. The basic idea is to store erroneous frames for error correction purposes. More specifically, at the receiver each bit is estimated with a majority criterion. The performance of different standard compliant error recovery techniques have been evaluated using actual transmission experiments in various channel conditions. Optimal tradeoffs between complexity, memory and perceived quality have been determined studying the quality gains that can be achieved for the specific case of multimedia applications. Perceived quality has been evaluated using objective measures, e.g. ITU−T PESQ for voice and PSNR for video. Results show that the majority combining approach is particularly effective for multimedia communications, even in very noisy scenarios. Gains up to about one unit on the MOS scale for speech and up to 5−6 dB PSNR in case of video have been measured with respect to the standard ARQ technique.