Performance analysis of H.264 video over error-prone transmission environment

Abstract

Wireless multimedia technology has witnessed a rapid development in recent years due to explosive growth in communication, commerce and entertainment services. Undoubtedly, future wireless communication systems will eventually integrated a broad range of multimedia services such as voice, video, and data. This will have a profound impact on the way individuals communicate and access information. It is very obvious that video communication has been very much popular due its high bandwidth demand for a video data to be efficiently transported across wireless network. The dynamic nature of the channel condition has to be considered while designing such systems in order to ultimately support effective video applications over error-prone transmission environment. This paper critically analyzes the performance of H.264 transmitted video over error prone transmission environment. Also, we examine the profound impact of the unpredicted channel condition on the video quality. Video applications are becoming increasingly popular in recent years. Basically, video applications have been used quite extensively in surveillance, education, entertainment, video conferencing and remote monitoring. Therefore, it is absolutely necessary to provide adequate quality of service (QoS) to support these applications in order to satisfy the increasing demand [1, 2]. With the recent technological advancement in video and wireless technology, there is dramatic need to integrate video applications into wireless environment and maintain its quality. The possibility of integrating multimedia application will depend greatly on high compression efficiency, increase available channel bandwidth and strategic plan. In wireless environment, the channel condition changes very rapidly due to multi-path fading, co-channel interference, mobility, and shadowing. Maintaining video quality in wireless environment is very challenging as a result of aforementioned reasons and interference from external radio sources and contention from other network nodes. The major problem with the deployment of such application in wireless LAN are high bit error, limited bandwidth, time varying channel condition, and dynamic network users. Therefore, it requires more strategic planning, and robust video coding which is adaptable to the network and constraints [3, 4].