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# Hierarchical content importance-based video quality assessment for HEVC encoded videos transmitted over LTE networks

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*Abstract*—To improve the accuracy of assessment, many previous works take into account the video content. However, these previous works just only consider the video content, but do not consider the location and importance of the degraded content. Thus, this paper takes into account not only the video content, but also the location and importance of the degraded content, and proposes a hierarchical content importance-based video quality assessment. Firstly, we propose to use the hierarchical content importance-based frame degradation rate (HFDR) metric to quantify the importance of degraded content hierarchically. Secondly, we propose to use the intra random access point (IRAP) loss rate (ILR) metric to quantify the impact of IRAP. Finally, the proposed HFDR metric and ILR metric are subsequently used to develop an objective video quality assessment model. The experimental results show that the predicted mean opinion score (MOS) of the proposed method highly correlates with the actual MOS.

*Keywords*—Content type, High efficiency video coding (HEVC), Long term evolution (LTE) network, Mean opinion score (MOS), Neural network, Quality of experience (QoE), Video quality assessment (VQA).

## 1. Introduction

With the rapid development of mobile multimedia services, more and more users of mobile terminals watch videos on their mobile phone. Currently, the long term evolution (LTE) network is the most popular communication system. However, channel fading over a wireless transmission channel leads to packet loss, delay, jitter,

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