



EFFICIENT ULTRASOUND VIDEO STREAMING BY USING HIGH EFFICIENCY VIDEO CODING

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ABSTRACT

High Efficiency Video Coding (HEVC) is designed in such a way to facilitate the efficient storage and transmission of high volume video. Additional features of HEVC provide up to 50% bit-rate saving compared to its preceding video coding standard H.264/MPEG-4 Advance Video Coding (AVC) and supports Ultra High Definition (UHD) with low complexity. However, optimizing HEVC for ultrasound scan video transmission has not been investigated thoroughly. In response, this work investigates the feasibility of using HEVC to stream ultrasound scan video over mobile networks. In this study, ultrasound scan videos are encoded at different quantization parameters to produce video sequences at different bit-rates. These video sequences are then transmitted across a mobile network. The received video sequences are evaluated quantitatively and qualitatively. Initial results indicate that at least 6 Mbps of bandwidth is required in order to transmit a full-high-definition ultrasound scan video at clinically acceptable quality. In other words, the Peak Signal to Noise Ratio (PSNR) of the received video sequence should be at least 50. These results also raise the requirement to develop more efficient HEVC schemes and transmission techniques to facilitate real time ultrasound scan video streaming over mobile networks in advanced telemedicine applications. It is envisaged that this study will pave the path to investigate bandwidth efficient encoding and transmission techniques to facilitate future telemedicine applications such as remote ultrasound scanning and diagnosis over mobile networks.

Keywords: ultrasound video, video encoding, video streaming, HEVC, telemedicine