CHAPTER 7

CONCLUSION

7.1 CONCLUSION

The commercial success of digital multimedia applications is purely based on the constant quality video delivery over the internet with the given bandwidth on network and performance of the Customer Premise Equipments (CPEs) constrains. Video Quality Measurement (VQM) plays a important role in achieving the quality of video delivery. And rate control plays a major role in achieving the even distribution of bits among the frames.

Literature survey carried out on video quality measurement and rate distortion optimization for rate control and the evaluating the rate control in multimedia applications and listed out the problem and carried out the following objectives

- Worked on developing efficient objective method of quality measurement with improved correlation to match with human subjective quality measurement.

- Came up with rate control design based on the subjective quality measurement which results in better quality video at a given bitrate.
• Evaluated the computation complexity of the proposed designs in real world implementation for the adaptability in a video telephony application.

Based on the outcome of the work the objectives listed in section 1.5 of this thesis were met and in meeting that the following work are carried out

Certain investigations have been made on quality metric calculation in various block based video coding standards by using objective and perceptual methods. The video impairments features such as blockiness, blur and jerkiness is extracted from the coded video. And a quality metric calculation algorithm based on these impairments has been designed and developed for the measurement of the user’s true quality of experience. The MOS based on these video impairments provides 25% more correlation than the SSIM and also has RMSE less by 45% than SSIM. This is evident from Table 4.8.

The quality metric parameters have been envisaged in the proposed work in order to analyze the closeness on predicting the users' quality of experience. Different complexity training and test video sequence have been considered to prove the efficiency of the proposed system. The new optimal rate control model based on the perceptual quality indicator has been proposed and implemented to evaluate effectiveness. The proposed rate control algorithm based on frame complexity model delivered less error rate for each frame coding and thus provided more quality of experience. The results are more appropriate which are evaluated and compared with Joint Video Team models.

The new optimal rate control algorithm along with frame rate control has been designed and developed to provide a better rate control for
low bitrate video telephony applications. The proposed rate control method has delivered better quality of video at the same bitrate compare with the ffmpeg implementation of the video codec. The computation complexity of the proposed rate control model has been within the implementation reach of TI DM64x platform. Hence this rate control method has more practical and employable to in-service video quality monitoring and control applications like video telephony and video streaming at the head end.

The overall proposed quality indicator metric calculation method and the rate control provide better quality of experience for the viewers. The outcomes of the proposed research work would provide a significant improvement in headend quality assurance for in-service video delivery applications.

7.2 SCOPE FOR FUTURE RESEARCH

As a consequence of the investigation carried out in the present research, the following aspects are identified for future enhancement.

- The effect of other video impairments other than blockiness, blur and jerkiness can be analyzed and can be included in the quality indicator model.

- The optimal rate control implementation is tested in SD resolution video and this can be extended for the HD resolution video. Since the quality of experience varies with the resolution of the video.

- The applicability of the developed model can be tested for video telephony applications and can be extended for different applications like IPTV.