Face Tracking for Optimized Bitrate Control in Low Delay Video Encoding

Chethan Ningaraju

September 5, 2016

1 Introduction

1.1 Low Delay Bitrate Control

In recent years there is increasing demand for high quality video conferencing solutions. To address this growing need there has been constant improvement in low delay video coding techniques. The need for extremely low end to end delay in video telephony puts additional contraints on video coding which results in compromise of video quality.

The bitrate control module is responsible for controlling the bit-consumption of the encoder to guarantee smooth playback. Bitrate control module is not codec specific and operates independent of any chosen codec. The main purpose of the bitrate control module is to ensure efficient playback of the encoded video. Figure 1 shows the functionality the bitrate control module. It achieves this by controlling the quantization parameter using during the encoding. The decision of quantization parameter is done considering the input bitrate, framerate, input complexity (spatial and temporal activity), acceptable input delay (a measure of VBV buffer size). The module also takes the feedback from the encoder regularly to make better decision. During the low delay video encoding, tools like bi-directional prediction are disabled.

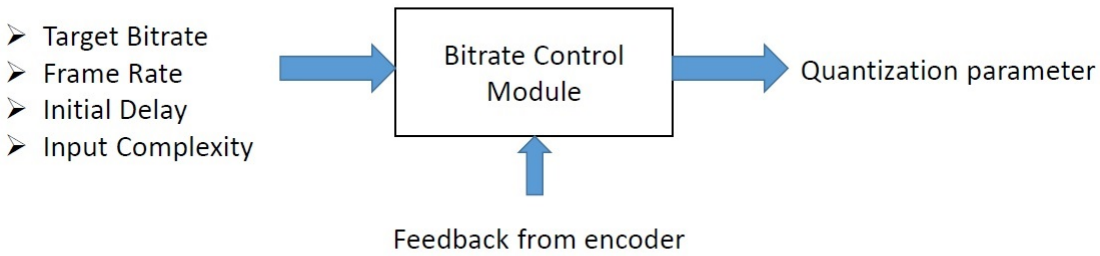

Figure 1: Bitrate Control Module Functionality

2 Operating Conditions