Content Adaptive and Error Propagation Aware Deep Video Compression

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1 Evaluation Datasets

HEVC Common Test Sequences [6] are the most popular test sequences for evaluating the video compression performance [6]. We use Class B, Class C, Class D and Class E in our experiments. We don't include the video sequences from HEVC Class A dataset since it requires more than 11Gb memory for evaluation, which exceeds the capacity of our 1080Ti platform.
Video Trace Library(VTL) dataset [2] contains lots of raw YUV sequences used for the low-level computer vision tasks. Following the setting in [3], we use 20 video sequences with the resolution of 352×288 in our experiments, and the maximum length of the video clips is set to 300 for all sequences.
Ultra Video Group(UVG) dataset [1] is a high frame rate(120fps) video dataset, in which the motion between neighbouring frames is small. Following the setting in [8, 5, 4], we use the video sequences with the resolution of 1920×1080 in our experiments.
MCL-JCV dataset [7] consists of 30 videos with the resolution of 1920×1080. This dataset is widely used for video quality assessment. For a fair comparison with [3], we also include this dataset in our experiments.

2 Experimental Results on the Evaluation Datasets

Due to the limited space, we provide more experimental results in this supplementary. Specifically, the experimental results on HEVC Class E dataset are provided in Fig. 1. Besides, the experimental results on the MCL-JCV dataset, VTL dataset and UVG dataset are provided in Fig. 2.

3 FFmpeg Setting for Our experiments

In our experiments, we have two different settings:*fixed GoP setting* and *default setting*. For the *fixed GoP setting*, we follow the setting in DVC and the command lines are provided as follows,

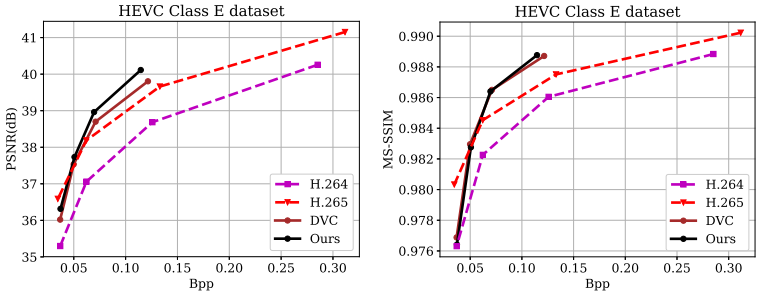

Fig. 1: The experimental results on HEVC Class E dataset at the fixed GoP setting.

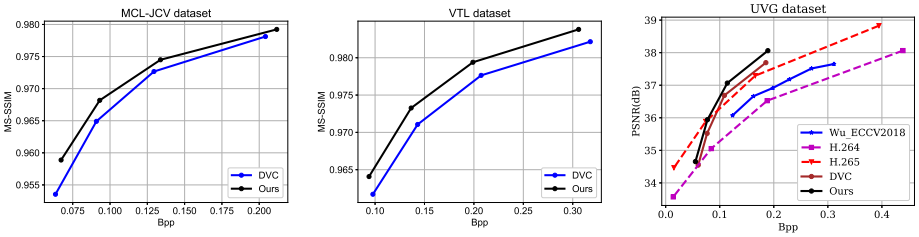

Fig. 2: Evaluation results for all video frames on the MCL-JCV dataset, VTL dataset and UVG dataset.

H.264: *ffmpeg -pix_fmt yuv420p -s WxH -r FR -i Video.yuv -vframes N -c:v libx264 -preset veryfast -tune zerolatency -crf Q -g GOP-bf 2 -b_strategy 0 -sc_threshold 0 output.mkv*

H.265: *ffmpeg -pix_fmt yuv420p -s WxH -r FR -i Video.yuv -vframes N -c:v libx265 -preset veryfast -tune zerolatency -x265-params "crf=Q:keyint=GOP" output.mkv*

FR, N, Q, GOP represents the frame rate, the number of encoded frames, quality, GOP size, respectively. N is set to 100 for the HEVC datasets. GOP is set as 10 for the HEVC dataset and 12 for the UVG dataset.

For the *default setting*, the command lines are provided as follows,

H.265: *ffmpeg -pix_fmt yuv420p -s WxH -r 50 -i video.yuv -c:v libx265 -preset veryfast -tune zerolatency -x265-params "qp=Q" output.mkv*

Q is the quantization parameter. W and H are the height and width of the yuv video.

References

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