Improving Deep Video Compression by Resolution-adaptive Flow Coding (Supplementary Materials)

A Results on the HEVC Class B, Class C and Class D datasets

In the main paper, the results of different methods on four datasets HEVC Class E, VTL, UVG and MCL-JVC are provided and we have also mentioned that the results on the HEVC Class B, Class C and Class D datasets will be provided in the *supplementary material*. Figure 1 reports the results of different methods on the HEVC Class B, Class C and Class D datasets. When compared with H.265, we observe that our method still achieves competitive results at low bit rates in terms of PSNR. Additionally, our method outperforms all other baseline methods in terms of MS-SSIM.

B The Command Line for H.264 and H.265

We follow the setting in [2] to use the FFmpeg to generate the compressed videos from H.264 and H.265 with the *default* mode. For the uncompressed video *A.yuv* with the resolution of $W \times H$, the command line for generating compressed video *output.mkv* by using the H.264 is provided as follows,

ffmpeg -pix_fmt yuv420p -s WxH -r FR -i A.yuv -vframes N -c:v libx264 -tune zerolatency -crf Q -g GoP -sc_threshold 0 output.mkv

And the command line for H.265 is provided as follows,

ffmpeg -pix_fmt yuv420p -s WxH -r FR -i A.yuv -vframes N -c:v libx265 -tune zerolatency -x265-params "crf=Q:keyint=GoP:verbose=1" output.mkv

where *FR, N, Q, GoP* represent the frame rate, the number of frames to be encoded, the quality and the GoP size. *Q* is set as 19, 23, 27, 31. *GoP* is set as 10 for the HEVC dataset and 12 for other datasets.

C Results of Our Method and H.265 Using Variable GoP Sizes

In the previous works like [1–3], the fixed GoP size is always used for fair comparison. In Figure 2, we provide the results of our method and H.265 when using variable GoP sizes on the whole sequences from the HEVC Class B, Class C and Class D datasets. It is clear that our approach still achieves competitive results when compared with H.265 in terms of PSNR and outperforms H.265 in terms of MS-SSIM.

For H.265 with variable GoP sizes, the command line is provided as follows,

ffmpeg -pix_fmt yuv420p -s WxH -r FR -i A.yuv -c:v libx265 -tune zerolatency -x265-params "qp=Q:verbose=1" output.mkv

where *FR, Q* represent the frame rate and the quality. Q is set as 22, 26, 30, 34.

References

1. Abdelaziz, D., Joaquim, C., Simone, S.M., Christopher, S.: Neural inter-frame compression for video coding. arXiv preprint arXiv:1911.55555 (2019)
2. Lu, G., Ouyang, W., Xu, D., Zhang, X., Cai, C., Gao, Z.: Dvc: An end-to-end deep video compression framework. In: Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition. pp. 11006–11015 (2019)
3. Wu, C.Y., Singhal, N., Krahenbuhl, P.: Video compression through image interpolation. In: Proceedings of the European Conference on Computer Vision (ECCV). pp. 416–431 (2018)

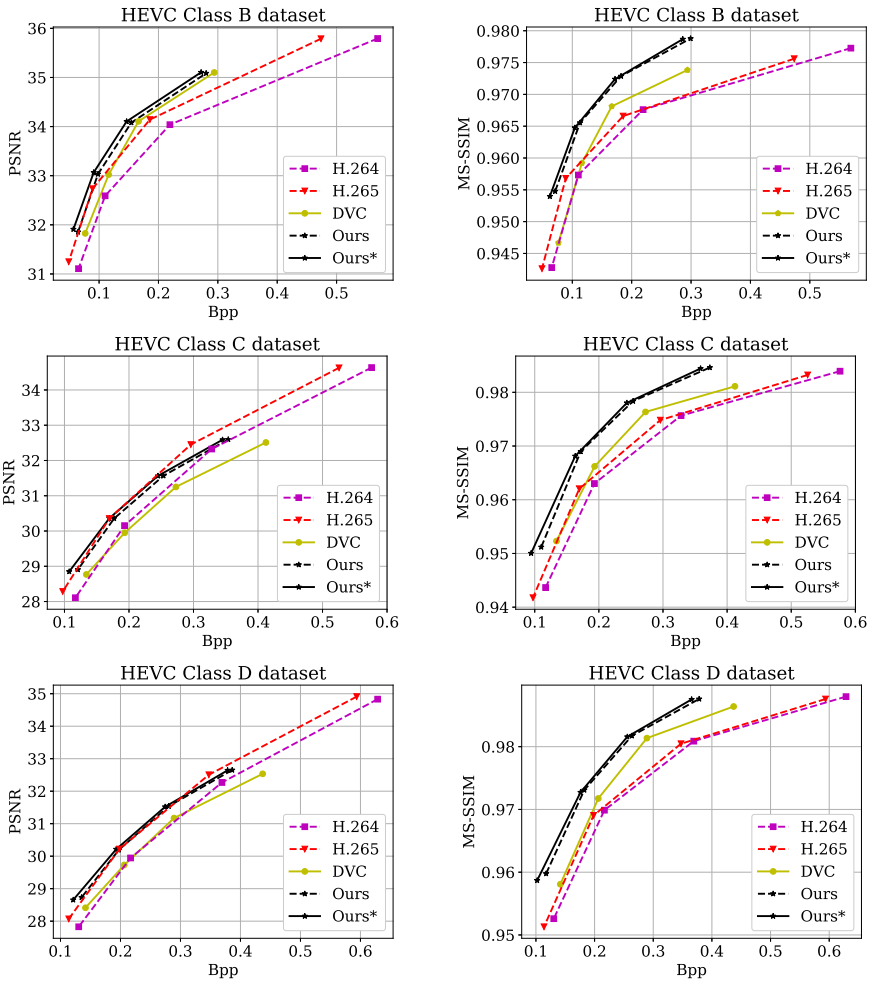

Fig. 1. The experimental results of different methods on the HEVC Class B, Class C and Class D datasets.

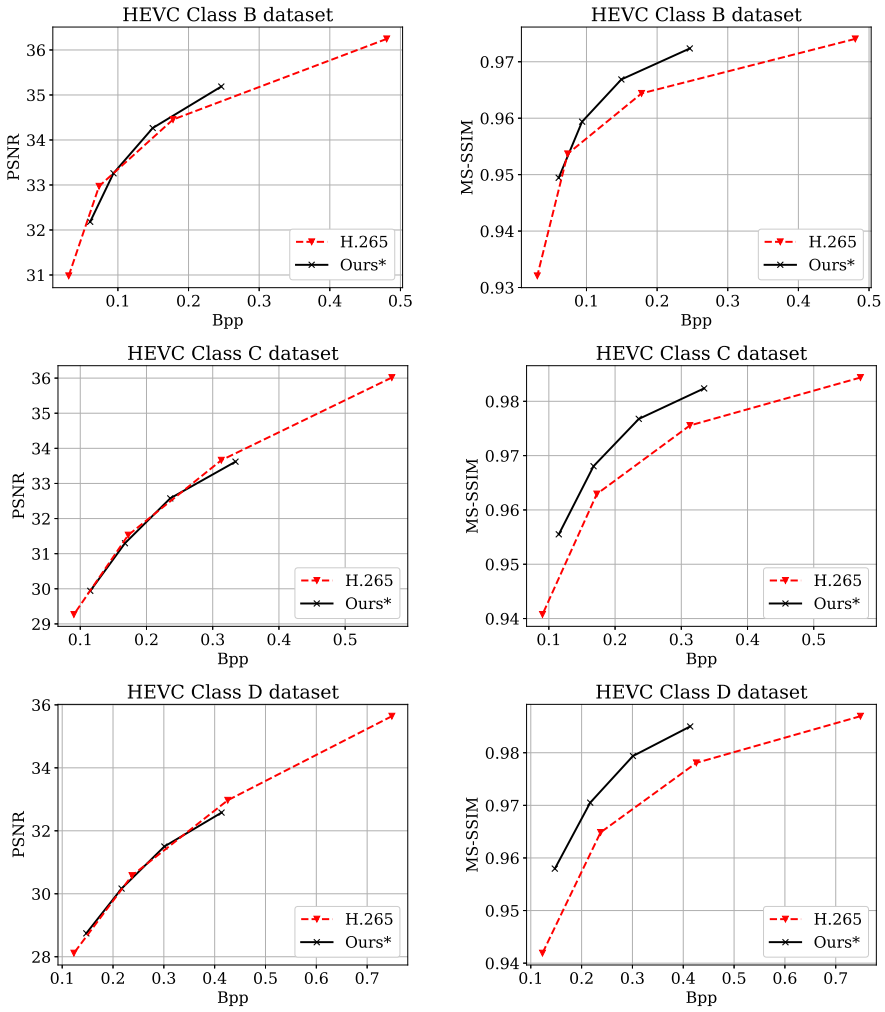

Fig. 2. The experimental results of our method and H.265 using variable GoP sizes on the HEVC Class B, Class C and Class D datasets.