QUANTIZATION PARAMETER DERIVATION FOR PALETTE MODE

CROSS-REFERENCE TO RELATED APPLICATIONS

[001] This application is a national phase of International Patent Application No. PCT/US2020/051540, filed on September 18, 2020, which claims the priority to and benefits of International Patent Application Nos. PCT/CN2019/106700 filed on September 19, 2019 and PCT/CN2019/108736 filed on September 27, 2019. For all purposes under the law, the entire disclosures of the aforementioned applications are incorporated by reference as part of the disclosure of this application.

TECHNICAL FIELD

[002] This document is related to video and image coding and decoding technologies.

BACKGROUND

[003] Digital video accounts for the largest bandwidth use on the internet and other digital communication networks. As the number of connected user devices capable of receiving and displaying video increases, it is expected that the bandwidth demand for digital video usage will continue to grow.

SUMMARY

[004] The disclosed techniques may be used by video or image decoder or encoder embodiments for quantization parameter derivation in palette mode coding and decoding.

[005] In an example aspect, a method of video processing is disclosed. The method includes determining, for a conversion between a current block of a video and a bitstream representation of the video, that the current block is coded using a palette mode and an escape symbol value is signaled in the bitstream representation, and performing, based on the determining, the conversion, wherein a clipped quantization parameter for the current block is used in the conversion, wherein the palette mode coding tool represents the current video block using a palette of representative color values, wherein the escape value is used for a sample of the current video block coded without using the representative color values, and wherein the clipped quantization parameter used for a chroma component of the video is derived based on a quantization parameter subsequent to a mapping operation of a quantization process or a dequantization process.

WHAT IS CLAIMED IS:

1. A method of video processing, comprising:

determining, for a conversion between a current video block of a video and a bitstream of the video, that a prediction mode is applied to the current video block, wherein in the prediction mode, reconstructed samples are represented by a set of representative color values comprising escaped samples;

determining, for the current video block, a quantization parameter used to derive the escaped samples; and

performing the conversion at least based on the quantization parameter,

wherein when the current video block is a chroma block, the quantization parameter is derived from a variable obtained by performing a mapping operation on a luma quantization parameter of a luma video block corresponding to the current video block.

2. The method of claim 1, wherein the quantization parameter is derived based on the variable and a clip function.

3. The method of claim 1 or 2, wherein the quantization parameter is modified using Max(QpPrimeTsMin, Qp) before being used to derive the escaped samples,

where QpPrimeTsMin denotes a minimum allowed quantization parameter for a transform skip mode, and

where Qp denotes the quantization parameter.

4. The method of claim 3, wherein the minimum allowed quantization parameter is indicated in a sequence parameter set in the bitstream.

5. The method of claim 4, wherein the value of QpPrimeTsMin is equal to (4 + 6 * n), and

wherein n denotes the value of a syntax element included in the sequence parameter set in the bitstream.

6. The method of claim 3, wherein the escape sample is reconstructed based on Clip3(0, (1 << BitDepth) − 1, tmpVal),

wherein tmpVal is determined based on m << (qP / 6) + 32) >> 6,

wherein qP specifies the modified quantization parameter, and

wherein m is determined based on the quantized value of the escaped sample.

7. The method of anyone of claims 1-6, wherein the conversion includes encoding the current video block into the bitstream.

8. The method of anyone of claims 1-6, wherein the conversion includes decoding the current video block from the bitstream.

9. An apparatus for processing video data comprising a processor and a non-transitory memory with instructions thereon, wherein the instructions upon execution by the processor, cause the processor to:

determine, for a conversion between a current video block of a video and a bitstream of the video, that a prediction mode is applied to the current video block, wherein in the prediction mode, reconstructed samples are represented by a set of representative color values comprising escaped samples;

determine, for the current video block, a quantization parameter used to derive the escaped samples; and

perform the conversion at least based on the quantization parameter,

wherein when the current video block is a chroma block, the quantization parameter is derived from a variable obtained by performing a mapping operation on a luma quantization parameter of a luma video block corresponding to the current video block.

10. The apparatus of claim 9, wherein the quantization parameter is derived based on the variable and a clip function.

11. The apparatus of claim 9 or 10, wherein the quantization parameter is modified using Max(QpPrimeTsMin, Qp) before being used to derive the escaped samples,

where QpPrimeTsMin denotes a minimum allowed quantization parameter for a transform skip mode, and

where Qp denotes the quantization parameter.

12. The apparatus of claim 11, wherein the minimum allowed quantization parameter is indicated in a sequence parameter set in the bitstream.

13. The apparatus of claim 12, wherein the value of QpPrimeTsMin is equal to (4 + 6 * n), and

wherein n denotes the value of a syntax element included in the sequence parameter set in the bitstream.

14. The apparatus of claim 11, wherein the escape sample is reconstructed based on Clip3(0, (1 << BitDepth) − 1, tmpVal),

wherein tmpVal is determined based on m << (qP / 6) + 32) >> 6,

wherein qP specifies the modified quantization parameter, and

wherein m is determined based on the quantized value of the escaped sample.

15. A non-transitory computer-readable storage medium storing instructions that cause a processor to:

determine, for a conversion between a current video block of a video and a bitstream of the video, that a prediction mode is applied to the current video block, wherein in the prediction mode, reconstructed samples are represented by a set of representative color values comprising escaped samples;

determine, for the current video block, a quantization parameter used to derive the escaped samples; and

perform the conversion at least based on the quantization parameter,

wherein when the current video block is a chroma block, the quantization parameter is derived from a variable obtained by performing a mapping operation on a luma quantization parameter of a luma video block corresponding to the current video block.

16. The non-transitory computer-readable storage medium of claim 15, wherein the quantization parameter is derived based on the variable and a clip function.

17. The non-transitory computer-readable storage medium of claim 15 or 16, wherein the quantization parameter is modified using Max(QpPrimeTsMin, Qp) before being used to derive the escaped samples,

where QpPrimeTsMin denotes a minimum allowed quantization parameter for a transform skip mode, and

where Qp denotes the quantization parameter.

18. The non-transitory computer-readable storage medium of claim 17, wherein the minimum allowed quantization parameter is indicated in a sequence parameter set in the bitstream.

19. The non-transitory computer-readable storage medium of claim 18, wherein the value of QpPrimeTsMin is equal to (4 + 6 * n), and

wherein n denotes the value of a syntax element included in the sequence parameter set in the bitstream.

20. A non-transitory computer-readable recording medium storing a bitstream of a video which is generated by a method performed by a video processing apparatus, wherein the method comprises:

determining, for a current video block of a video, that a prediction mode is applied to the current video block, wherein in the prediction mode, reconstructed samples are represented by a set of representative color values comprising escaped samples;

determining, for the current video block, a quantization parameter used to derive the escaped samples; and

generating the bitstream at least based on the quantization parameter,

wherein when the current video block is a chroma block, the quantization parameter is derived from a variable obtained by performing a mapping operation on a luma quantization parameter of a luma video block corresponding to the current video block.