

ALIGNMENT OF PREDICTION WEIGHTS IN VIDEO CODING

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application is based on International Patent Application No. PCT/CN2020/112779, filed on September 1, 2020, which claims the priority to and benefits of International Patent Application No. PCT/CN2019/103903, filed on September 1, 2019, and PCT/CN2019/110490, filed on October 10, 2019. All the aforementioned patent applications are hereby incorporated by reference in their entireties.

TECHNICAL FIELD

[0002] This patent document relates to video coding and decoding.

BACKGROUND

[0003] In spite of the advances in video compression, digital video still 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

[0004] Devices, systems and methods related to digital video coding, and specifically, to video and image coding and decoding in which inter prediction is used with triangular or arbitrary geometry partitions of video blocks.

[0005] In one example aspect, a method of video processing is disclosed. The method includes determining chroma weights used for determining a chroma prediction block of a chroma block of a current block of a video by blending predictions of the chroma block according to a rule, and performing a conversion between the current block and a coded representation of the video according to the determining, wherein the rule specifies that the chroma weights are determined from luma weights of a collocated luma block of the current block; wherein the current block is coded with a geometric partitioning mode.

CLAIMS

1. A method of processing video data, comprising:
 - determining, during a conversion between a current chroma block of a video and a bitstream of the video, that the current chroma block is coded with a geometric partitioning mode;
 - determining a first motion information and a second motion information;
 - determining chroma weights used for determining a final chroma prediction for the current chroma block by a blending process; and
 - performing the conversion based on the first motion information, the second motion information and the chroma weights, wherein the conversion comprises applying the blending process to generate the final chroma prediction based on a weighted sum of prediction samples derived from the first motion information and the second motion information using the chroma weights,
 - wherein the chroma weights are determined based on a chroma format of the current chroma block indicating a chroma subsampling ratio relative to a collocated luma block of the current chroma block.
2. The method of claim 1, wherein for a 4:4:4 chroma format, the chroma weights are same as luma weights applied to the collocated luma block for each position inside the current chroma block.
3. The method of claim 1, wherein for a 4:2:0 or 4:2:2 chroma format, the chroma weights are a subset of luma weights applied to the collocated luma block.
4. The method of any of claims 1-3, wherein a chroma weight, $\text{WeightC}[x][y]$, is equal to $\text{WeightY}[f(x)][g(y)]$, wherein x is an integer between 0 and $W/\text{subWidthC}-1$, y is an integer between 0 and $H/\text{subHeightC}-1$, W and H are a width and a height of the collocated luma block, subWidthC and subHeightC denote chroma subsampling ratios in width and height directions, respectively, and $\text{WeightY}[a][b]$ denotes a luma weight, a is an integer between 0 and $W-1$ and b

is an integer between 0 and H-1.

5. The method of claim 4, wherein $f(x)$ is based on $x \cdot \text{subWidthC} + \text{offsetX}$, $g(y)$ is based on $y \cdot \text{subHeightC} + \text{OffsetY}$, where offsetX and OffsetY are integers.

6. The method of any of claims 1-5, wherein the chroma weights are same for two chroma components.

7. The method of claim 4, wherein the chroma weights and the luma weights are integers, and wherein both odd integer and even integer weights are allowed.

8. The method of claim 4, wherein the chroma weights and/or the luma weights are clipped to a range $[M, N]$, wherein $M=0$ and $N=8$.

9. The method of any of claims 1-8, wherein the geometric partitioning mode is enabled or disabled based on a differences obtained as $\text{Abs}(\text{Log}_2(W) - \text{Log}_2(H))$, wherein Abs is absolute function, W and H are a width and a height of the collocated luma block.

10. The method of any of claims 1-9, wherein the geometric partitioning mode is disabled due to the collocated luma block having a height greater than N and/or a width greater than M , wherein $N=M=64$; or due to the collocated luma block having a height equal to S and/or a width equal to T , wherein $S=T=4$.

11. The method of any of claims 1-10, wherein when a syntax element descriptive of a partitioning mode or a first merging candidate index of a geometric partitioning based motion compensation candidate list or a second merging candidate index of the geometric partitioning based motion compensation candidate list is not included in the bitstream, and the syntax element is inferred to be 0.

12. The method of claim 4, wherein the chroma weights and/or the luma weights are calculated from computing equations.

13. The method of any of claims 1-12, wherein the conversion includes encoding the video into the bitstream.

14. The method of any of claims 1-12, wherein the conversion includes decoding the video from the bitstream.

15. 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, during a conversion between a current chroma block of a video and a bitstream of the video, that the current chroma block is coded with a geometric partitioning mode;

determine a first motion information and a second motion information;

determine chroma weights used for determining a final chroma prediction for the current chroma block by a blending process; and

perform the conversion based on the first motion information, the second motion information and the chroma weights, wherein the conversion comprises applying the blending process to generate the final chroma prediction based on a weighted sum of prediction samples derived from the first motion information and the second motion information using the chroma weights,

wherein the chroma weights are determined based on a chroma format of the current chroma block indicating a chroma subsampling ratio relative to a collocated luma block of the current chroma block.

16. The apparatus of claim 15, wherein for a 4:4:4 chroma format, the chroma weights are same as luma weights applied to the collocated luma block for each position inside the current chroma block;

wherein for a 4:2:0 or 4:2:2 chroma format, the chroma weights are a subset of luma weights applied to the collocated luma block;

wherein a chroma weight, $WeightC[x][y]$, is equal to $WeightY[f(x)][g(y)]$, wherein x is an integer between 0 and $W/subWidthC-1$, y is an integer between 0 and $H/subHeightC-1$, W and H are a width and a height of the collocated luma block, $subWidthC$ and $subHeightC$ denote

chroma subsampling ratios in width and height directions, respectively, and $WeightY[a][b]$ denotes a luma weight, a is an integer between 0 and $W-1$ and b is an integer between 0 and $H-1$; and

wherein $f(x)$ is based on $x \cdot subWidthC + offsetX$, $g(y)$ is based on $y \cdot subHeightC + OffsetY$, where $offsetX$ and $OffsetY$ are integers.

17. The apparatus of claim 15 or 16, wherein the chroma weights are same for two chroma components;

wherein the chroma weights and the luma weights are integers, and wherein both odd integer and even integer weights are allowed;

wherein the chroma weights and/or the luma weights are clipped to a range $[M, N]$, wherein $M=0$ and $N=8$;

wherein the geometric partitioning mode is enabled or disabled based on a differences obtained as $Abs(\log_2(W) - \log_2(H))$, wherein Abs is absolute function, W and H are a width and a height of the collocated luma block;

wherein the geometric partitioning mode is disabled due to the collocated luma block having a height greater than N and/or a width greater than M , wherein $N=M=64$; or due to the collocated luma block having a height equal to S and/or a width equal to T , wherein $S=T=4$;

wherein when a syntax element descriptive of a partitioning mode or a first merging candidate index of a geometric partitioning based motion compensation candidate list or a second merging candidate index of the geometric partitioning based motion compensation candidate list is not included in the bitstream, and the syntax element is inferred to be 0; and

wherein the chroma weights and/or the luma weights are calculated from computing equations.

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

determine, during a conversion between a current chroma block of a video and a bitstream of the video, that the current chroma block is coded with a geometric partitioning mode;

determine a first motion information and a second motion information;

determine chroma weights used for determining a final chroma prediction for the current

chroma block by a blending process; and

perform the conversion based on the first motion information, the second motion information and the chroma weights, wherein the conversion comprises applying the blending process to generate the final chroma prediction based on a weighted sum of prediction samples derived from the first motion information and the second motion information using the chroma weights,

wherein the chroma weights are determined based on a chroma format of the current chroma block indicating a chroma subsampling ratio relative to a collocated luma block of the current chroma block.

19. The non-transitory computer-readable storage medium of claim 18, wherein for a 4:4:4 chroma format, the chroma weights are same as luma weights applied to the collocated luma block for each position inside the current chroma block;

wherein for a 4:2:0 or 4:2:2: chroma format, the chroma weights are a subset of luma weights applied to the collocated luma block;

wherein a chroma weight, $\text{WeightC}[x][y]$, is equal to $\text{WeightY}[f(x)][g(y)]$, wherein x is an integer between 0 and $W/\text{subWidthC}-1$, y is an integer between 0 and $H/\text{subHeightC}-1$, W and H are a width and a height of the collocated luma block, subWidthC and subHeightC denote chroma subsampling ratios in width and height directions, respectively, and $\text{WeightY}[a][b]$ denotes a luma weight, a is an integer between 0 and $W-1$ and b is an integer between 0 and $H-1$;

wherein $f(x)$ is based on $x*\text{subWidthC}+\text{offsetX}$, $g(y)$ is based on $y*\text{subHeightC}+\text{OffsetY}$, where offsetX and OffsetY are integers;

wherein the chroma weights are same for two chroma components;

wherein the chroma weights and the luma weights are integers, and wherein both odd integer and even integer weights are allowed;

wherein the chroma weights and/or the luma weights are clipped to a range $[M, N]$, wherein $M=0$ and $N=8$;

wherein the geometric partitioning mode is enabled or disabled based on a differences obtained as $\text{Abs}(\text{Log}_2(W) - \text{Log}_2(H))$, wherein Abs is absolute function, W and H are a width and a height of the collocated luma block;

wherein the geometric partitioning mode is disabled due to the collocated luma block

having a height greater than N and/or a width greater than M, wherein $N=M=64$; or due to the collocated luma block having a height equal to S and/or a width equal to T, wherein $S=T=4$;

wherein when a syntax element descriptive of a partitioning mode or a first merging candidate index of a geometric partitioning based motion compensation candidate list or a second merging candidate index of the geometric partitioning based motion compensation candidate list is not included in the bitstream, and the syntax element is inferred to be 0; and

wherein the chroma weights and/or the luma weights are calculated from computing equations.

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 that a current chroma block of the video is coded with a geometric partitioning mode;

determining a first motion information and a second motion information;

determining chroma weights used for determining a final chroma prediction for the current chroma block by a blending process; and

generating the bitstream based on the first motion information, the second motion information and the chroma weights, wherein the generating comprises applying the blending process to generate the final chroma prediction based on a weighted sum of prediction samples derived from the first motion information and the second motion information using the chroma weights,

wherein the chroma weights are determined based on a chroma format of the current chroma block indicating a chroma subsampling ratio relative to a collocated luma block of the current chroma block.