SIGNALLING OF WEIGHTS OF A REFERENCE PICTURE LIST

CROSS-REFERENCE TO RELATED APPLICATION

[001] This application is based on International Patent Application No. PCT/US2021/015006, filed on January 26, 2021, which~~Under the applicable patent law and/or rules pursuant to the Paris Convention, this application is made to timely~~ claims the priority to and benefits of U.S. Provisional Patent Application No. US 62/978,740 filed on February 19, 2020. All the aforementioned patent applications are hereby incorporated by reference in their entireties.~~For all purposes under the law, the entire disclosure of the aforementioned application is incorporated by reference as part of the disclosure of this application.~~

TECHNICAL FIELD

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

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 present document discloses techniques, which include weighted prediction, that can be used by video encoders and decoders for processing a bitstream of a video to perform video encoding and decoding.

[005] In one example aspect, a video processing method is disclosed. The method includes performing a conversion, according to a rule, between a current slice of a current picture of a video and a bitstream of the video, wherein the rule specifies that a value of a first syntax element of a picture parameter set (PPS) and a value of a second syntax element of the PPS control whether a third syntax element is included in the bitstream, and wherein the first syntax element indicates whether a weighted prediction is enabled for bi-directional slices (B slices) of coded pictures in the bitstream referring to the PPS, the second syntax element indicates whether information related to the weighted prediction is present in picture headers or slice headers of coded pictures referring

to the PPS, and the third syntax element indicates a number of weights associated with a reference picture list 1 of the current slice.

WHAT IS CLAIMED IS:

1. A method of video processing, comprising:

performing a conversion, according to a rule, between a current slice of a current picture of a video and a bitstream of the video,

wherein the rule specifies that a value of a first syntax element of a picture parameter set (PPS) and a value of a second syntax element of the PPS control whether a third syntax element is included in the bitstream, and

wherein the first syntax element indicates whether a weighted prediction is enabled for bi-directional slices (B slices) of coded pictures in the bitstream referring to the PPS, the second syntax element indicates whether information related to the weighted prediction is present in picture headers or slice headers of coded pictures referring to the PPS, and the third syntax element indicates a number of weights associated with a reference picture list 1 of the current slice.

2. The method of claim 1, wherein the first syntax element is pps_weighted_bipred_flag, the second syntax element is wp_info_in_ph_flag, and the third syntax element is num_l1_weights.

3. The method of claim 1 or 2, wherein the first syntax element equaling zero indicates that the weighted prediction is disabled for B slices of the coded pictures referring to the PPS.

4. The method of claim 1 or 2, wherein the first syntax element equaling one indicates that the weighted prediction is enabled for B slices of the coded pictures referring to the PPS.

5. The method of claim 1 or 2, wherein the first syntax element is equal to zero when a fourth syntax element, which is included in a sequence parameter set (SPS), is equal to zero.

6. The method of claim 5, wherein the fourth syntax element is sps_weighted_bipred_flag.

7. The method of claim 1 or 2, wherein the first syntax element equaling zero indicates that the number of weights associated with the reference picture list 1 are not included in the slice header of the current slice.

1. A method of video processing, comprising:

performing a conversion, according to a rule, between a current slice of a current picture of a video and a bitstream of the video,

wherein the rule specifies that a value of a first syntax element of a picture parameter set (PPS) and a value of a second syntax element of the PPS control whether a third syntax element is included in the bitstream,

wherein the first syntax element indicates whether a weighted prediction is enabled for bi-directional slices (B slices) of coded pictures in the bitstream referring to the PPS,

wherein the second syntax element indicates whether information related to the weighted prediction is present in picture headers or slice headers of the coded pictures in the bitstream referring to the PPS, and

wherein the third syntax element indicates a number of weights associated with a reference picture list 1 of the current slice.

2. The method of claim 1, wherein the first syntax element is pps_weighted_bipred_flag, the second syntax element is wp_info_in_ph_flag, and the third syntax element is num_l1_weights.

3. The method of claim 1 or 2, wherein the third syntax element indicates the number of weights associated with the reference picture list 1 when the value of the first syntax element indicates that the weighted prediction is enabled for the B slices of the coded pictures in the bitstream referring to the PPS, and the value of the second syntax element indicates that the information related to the weighted prediction is allowed to be present in the picture headers and not present in the slice headers.

4. The method of claim 3, wherein the value of the first syntax element equaling zero indicates that the weighted prediction is disabled for the B slices of the coded pictures in the bitstream referring to the PPS, and wherein the value of the first syntax element equaling one indicates that the weighted prediction is enabled for the B slices of the coded pictures in the bitstream referring to the PPS.

~~8. The method of claim 1 or 2, wherein the first syntax element equaling one and the second syntax element equaling one indicates that the number of weights associated with the reference picture list 1 are included in the slice header of the current slice.~~

~~9. The method of any of claims 1 to 8, wherein the conversion comprises decoding the video from the bitstream.~~

~~10. The method of any of claims 1 to 8, wherein the conversion comprises encoding the video into the bitstream.~~

~~11. A method of storing a bitstream representing a video to a computer-readable recording medium, comprising:~~

~~generating the bitstream from the video according to a method described in any one or more of claims 1 to 8; and~~

~~storing the bitstream in the computer-readable recording medium.~~

~~12. A video processing apparatus comprising a processor configured to implement a method recited in any one or more of claims 1 to 11.~~

~~13. A computer-readable medium having instructions stored thereon, the instructions, when executed, causing a processor to implement a method recited in one or more of claims 1 to 11.~~

~~14. A computer readable medium that stores the bitstream generated according to any one or more of claims 1 to 11.~~

~~15. A video processing apparatus for storing a bitstream, wherein the video processing apparatus is configured to implement a method recited in any one or more of claims 1 to 11.~~

5. The method of claim 3 or 4, wherein the value of the second syntax element equaling zero indicates that the information related to the weighted prediction is not present in the picture headers and is allowed to be present in the slice headers, and wherein the value of the second syntax element equaling one indicates that the information related to the weighted prediction is allowed to be present in the picture headers and not present in the slice headers.

6. The method of any one of claims 1-5, wherein when the value of the first syntax element is equal to zero, the third syntax element is not included in the bitstream.

7. The method of claim 6, wherein the number of weights associated with the reference picture list 1 is derived to be equal to zero.

8. The method of any one of claims 1-7, wherein when the value of the first syntax element equals one and the value of the second syntax element equals zero, the number of weights associated with the reference picture list 1 is derived to be equal to a number of active reference entries for the reference picture list 1.

9. The method of any one of claims 1-8, wherein the conversion comprises decoding the video from the bitstream.

10. The method of any one of claims 1-8, wherein the conversion comprises encoding the video into the bitstream.

11. 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:

perform a conversion, according to a rule, between a current slice of a current picture of a video and a bitstream of the video,

wherein the rule specifies that a value of a first syntax element of a picture parameter set (PPS) and a value of a second syntax element of the PPS control whether a third syntax element is included in the bitstream,

wherein the first syntax element indicates whether a weighted prediction is enabled for bi-directional slices (B slices) of coded pictures in the bitstream referring to the PPS,

wherein the second syntax element indicates whether information related to the weighted prediction is present in picture headers or slice headers of the coded pictures in the bitstream referring to the PPS, and

wherein the third syntax element indicates a number of weights associated with a reference picture list 1 of the current slice.

12. The apparatus of claim 11, wherein the third syntax element indicates the number of weights associated with the reference picture list 1 when the value of the first syntax element indicates that the weighted prediction is enabled for the B slices of the coded pictures in the bitstream referring to the PPS, and the value of the second syntax element indicates that the information related to the weighted prediction is allowed to be present in the picture headers and not present in the slice headers,

wherein the value of the first syntax element equaling zero indicates that the weighted prediction is disabled for the B slices of the coded pictures in the bitstream referring to the PPS, and wherein the value of the first syntax element equaling one indicates that the weighted prediction is enabled for the B slices of the coded pictures in the bitstream referring to the PPS, and

wherein the value of the second syntax element equaling zero indicates that the information related to the weighted prediction is not present in the picture headers and is allowed to be present in the slice headers, and wherein the value of the second syntax element equaling one indicates that the information related to the weighted prediction is allowed to be present in the picture headers and not present in the slice headers.

13. The apparatus of claim 11 or 12, wherein when the value of the first syntax element is equal to zero, the third syntax element is not included in the bitstream, and

wherein the number of weights associated with the reference picture list 1 is derived to be equal to zero.

14. The apparatus of any one of claims 11-13, wherein when the value of the first syntax element equals one and the value of the second syntax element equals zero, the number of weights associated with the reference picture list 1 is derived to be equal to a number of active reference entries for the reference picture list 1.

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

perform a conversion, according to a rule, between a current slice of a current picture of a video and a bitstream of the video,

wherein the rule specifies that a value of a first syntax element of a picture parameter set (PPS) and a value of a second syntax element of the PPS control whether a third syntax element is included in the bitstream,

wherein the first syntax element indicates whether a weighted prediction is enabled for bi-directional slices (B slices) of coded pictures in the bitstream referring to the PPS,

wherein the second syntax element indicates whether information related to the weighted prediction is present in picture headers or slice headers of the coded pictures in the bitstream referring to the PPS, and

wherein the third syntax element indicates a number of weights associated with a reference picture list 1 of the current slice.

16. The non-transitory computer-readable storage medium of claim 15, wherein the third syntax element indicates the number of weights associated with the reference picture list 1 when the value of the first syntax element indicates that the weighted prediction is enabled for the B slices of the coded pictures in the bitstream referring to the PPS, and the value of the second syntax element indicates that the information related to the weighted prediction is allowed to be present in the picture headers and not present in the slice headers,

wherein the value of the first syntax element equaling zero indicates that the weighted prediction is disabled for the B slices of the coded pictures in the bitstream referring to the PPS, and wherein the value of the first syntax element equaling one indicates that the weighted prediction is enabled for the B slices of the coded pictures in the bitstream referring to the PPS, and

wherein the value of the second syntax element equaling zero indicates that the information related to the weighted prediction is not present in the picture headers and is allowed to be present in the slice headers, and wherein the value of the second syntax element equaling one indicates that the information related to the weighted prediction is allowed to be present in the picture headers and not present in the slice headers.

17. The non-transitory computer-readable storage medium of claim 15 or 16, wherein when the value of the first syntax element is equal to zero, the third syntax element is not included in the bitstream, and

wherein the number of weights associated with the reference picture list 1 is derived to be equal to zero.

18. The non-transitory computer-readable storage medium of any one of claims 15-17, wherein when the value of the first syntax element equals one and the value of the second syntax element equals zero, the number of weights associated with the reference picture list 1 is derived to be equal to a number of active reference entries for the reference picture list 1.

19. 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:

generating, according to a rule, the bitstream of the video comprising a current picture including a current slice,

wherein the rule specifies that a value of a first syntax element of a picture parameter set (PPS) and a value of a second syntax element of the PPS control whether a third syntax element is included in the bitstream,

wherein the first syntax element indicates whether a weighted prediction is enabled for bi-directional slices (B slices) of coded pictures in the bitstream referring to the PPS,

wherein the second syntax element indicates whether information related to the weighted prediction is present in picture headers or slice headers of the coded pictures in the bitstream referring to the PPS, and

wherein the third syntax element indicates a number of weights associated with a reference picture list 1 of the current slice.

20. The non-transitory computer-readable recording medium of claim 19, wherein when the value of the first syntax element is equal to zero, the third syntax element is not included in the bitstream, and wherein the number of weights associated with the reference picture list 1 is derived to be equal to zero, or

wherein when the value of the first syntax element equals one and the value of the second syntax element equals zero, the number of weights associated with the reference picture list 1 is derived to be equal to a number of active reference entries for the reference picture list 1.