SCALING WINDOW IN VIDEO CODING

CROSS REFERENCE TO RELATED APPLICATIONS

[001] This application is based on International Patent Application No. PCT/CN2021/095012, filed on May 21, 2021, which claims the priority to and benefits of International Patent Application No. PCT/CN2020/091533, filed on May 21, 2020. All the aforementioned patent applications are hereby incorporated by reference in their entireties.

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 that can be used by video encoders and decoders for processing coded representation of video using control information useful for decoding of the coded representation.

[005] In one example aspect, a video processing method is disclosed. The method includes performing a conversion between a video comprising a video picture and a bitstream of a video according to a rule, wherein the rule specifies that syntax elements indicate a first width and a first height of a scaling window for the video picture, and wherein the rule specifies that a range of permissible values for the syntax elements include values greater than or equal to two times a second width of the video picture and two times a second height of the video picture.

[006] In another example aspect, a video processing method is disclosed. The method includes determining, for a conversion between a video picture of a video and a bitstream of the video, whether or how (1) a first width or a first height of a first scaling window of a reference video picture of the video and (2) a second width or a second height of a second scaling window of a

CLAIMS

1. A method of video processing, comprising:

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

wherein the rule specifies that first syntax elements indicate a first width and a first height of a scaling window for the video picture, and

wherein the rule specifies that a range of permissible values for the first width and the first height that are indicated by the first syntax elements are allowed to be greater than or equal to two times a second width of the video picture and two times a second height of the video picture.

2. The method of claim 1, wherein values of the first syntax elements specify offsets that are applied to a size of the video picture for scaling ratio calculation.

3. The method of claim 1 or 2, wherein the first syntax elements include pps_scaling_win_left_offset, pps_scaling_win_right_offset, pps_scaling_win_top_offset, and pps_scaling_win_bottom_offset.

4. The method of claim 3, wherein the rule specifies that a value of SubWidthC * (pps_scaling_win_left_offset + pps_scaling_win_right_offset) is greater than or equal to −pps_pic_width_in_luma_samples * M, and less than pps_pic_width_in_luma_samples,

wherein CurrPicScalWinWidthL is the first width of the scaling window,

wherein pps_pic_width_in_luma_samples is the second width of the video picture,

wherein SubWidthC is a chroma width sampling variable of the video picture and obtained from a table according to a chroma format of the video picture,

wherein CurrPicScalWinWidthL = pps_pic_width_in_luma_samples − SubWidthC * (pps_scaling_win_right_offset + pps_scaling_win_left_offset), and

wherein M is a positive integer value that is greater than or equal to 2.

5. The method of claim 4, wherein the rule specifies that a value of SubHeightC * (pps_scaling_win_top_offset + pps_scaling_win_bottom_offset) is greater than or equal to −pps_pic_height_in_luma_samples * N and less than pps_pic_height_in_luma_samples,

wherein CurrPicScalWinHeightL is the first height of the scaling window,

wherein pps_pic_height_in_luma_samples is the second height of the video picture,

wherein SubHeightC is a chroma height sampling variable of the video picture and obtained from the table according to the chroma format of the video picture,

wherein CurrPicScalWinHeightL = pps_pic_height_in_luma_samples − SubHeightC * (pps_scaling_win_bottom_offset + pps_scaling_win_top_offset), and

wherein N is a positive integer value that is greater than or equal to 2.

6. The method of claim 5, wherein N is equal to M.

7. The method of any one of claims 1-6, wherein the rule specifies that a second syntax element is included in a sequence parameter set that the video picture refers to,

wherein the second syntax element indicates whether a reference picture resampling is enabled and whether one or more slices of the video picture are allowed to refer to a reference picture in an active entry in a reference picture list, and

wherein the reference picture has any one or more of multiple parameters that are different than that of the video picture, the multiple parameters include following six parameters: 1) a video picture width, 2) a video picture height, 3) a scaling window left offset, 4) a scaling window right offset, 5) a scaling window top offset, and 6) a scaling window bottom offset, which are specified by the first syntax elements.

8. The method of claim 7, wherein the second syntax element having a value of 1 indicates that the reference picture resampling is enabled and that the video picture is allowed to have one or more slices that refer to the reference picture in the active entry in the reference picture list.

9. The method of claim 7 or 8, wherein the second syntax element having a value of 0 indicates that the reference picture resampling is disabled and that no slice of the video picture is allowed to refer to the reference picture in the active entry of the reference picture list.

10. The method of any one of claims 1-9, wherein the performing the conversion comprises encoding the video into the bitstream.

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

12. 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 between a video comprising a video picture and a bitstream of the video according to a rule,

wherein the rule specifies that first syntax elements indicate a first width and a first height of a scaling window for the video picture, and

wherein the rule specifies that a range of permissible values for the first width and the first height that are indicated by the first syntax elements are allowed to be greater than or equal to two times a second width of the video picture and two times a second height of the video picture.

13. The apparatus of claim 12, wherein values of the first syntax elements specify offsets that are applied to a size of the video picture for scaling ratio calculation.

14. The apparatus of claim 12 or 13, wherein the first syntax elements include pps_scaling_win_left_offset, pps_scaling_win_right_offset, pps_scaling_win_top_offset, and pps_scaling_win_bottom_offset,

wherein the rule specifies that a value of SubWidthC * (pps_scaling_win_left_offset + pps_scaling_win_right_offset) is greater than or equal to −pps_pic_width_in_luma_samples * M and less than pps_pic_width_in_luma_samples,

wherein CurrPicScalWinWidthL is the first width of the scaling window,

wherein pps_pic_width_in_luma_samples is the second width of the video picture,

wherein SubWidthC is a chroma width sampling variable of the video picture and obtained from a table according to a chroma format of the video picture,

wherein CurrPicScalWinWidthL = pps_pic_width_in_luma_samples − SubWidthC * (pps_scaling_win_right_offset + pps_scaling_win_left_offset), and

wherein M is a positive integer value that is greater than or equal to 2; and

wherein the rule specifies that a value of SubHeightC * (pps_scaling_win_top_offset + pps_scaling_win_bottom_offset) is greater than or equal to −pps_pic_height_in_luma_samples * N and less than pps_pic_height_in_luma_samples,

wherein CurrPicScalWinHeightL is the first height of the scaling window,

wherein pps_pic_height_in_luma_samples is the second height of the video picture,

wherein SubHeightC is a chroma height sampling variable of the video picture and obtained from the table according to the chroma format of the video picture,

wherein CurrPicScalWinHeightL = pps_pic_height_in_luma_samples − SubHeightC * (pps_scaling_win_bottom_offset + pps_scaling_win_top_offset), and

wherein N is a positive integer value that is greater than or equal to 2.

15. The apparatus of claim 14, wherein N is equal to M.

16. The apparatus of any one of claims 12-15, wherein the rule specifies that a second syntax element is included in a sequence parameter set that the video picture refers to,

wherein the second syntax element indicates whether a reference picture resampling is enabled and whether one or more slices of the video picture are allowed to refer to a reference picture in an active entry in a reference picture list, and

wherein the reference picture has any one or more of multiple parameters that are different than that of the video picture, the multiple parameters include following six parameters: 1) a video picture width, 2) a video picture height, 3) a scaling window left offset, 4) a scaling window right offset, 5) a scaling window top offset, and 6) a scaling window bottom offset, which are specified by the first syntax elements,

wherein the second syntax element having a value of 1 indicates that the reference picture resampling is enabled and that the video picture is allowed to have one or more slices that refer to the reference picture in the active entry in the reference picture list, and

wherein the second syntax element having a value of 0 indicates that the reference picture resampling is disabled and that no slice of the video picture is allowed to refer to the reference picture in the active entry of the reference picture list.

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

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

wherein the rule specifies that first syntax elements indicate a first width and a first height of a scaling window for the video picture, and

wherein the rule specifies that a range of permissible values for the first width and the first height that are indicated by the first syntax elements are allowed to be greater than or equal to two times a second width of the video picture and two times a second height of the video picture.

18. The non-transitory computer-readable storage medium of claim 17, wherein values of the first syntax elements specify offsets that are applied to a size of the video picture for scaling ratio calculation, and the first syntax elements include pps_scaling_win_left_offset, pps_scaling_win_right_offset, pps_scaling_win_top_offset, and pps_scaling_win_bottom_offset,

wherein the rule specifies that a value of SubWidthC * (pps_scaling_win_left_offset + pps_scaling_win_right_offset)) is greater than or equal to −pps_pic_width_in_luma_samples * M and less than pps_pic_width_in_luma_samples,

wherein CurrPicScalWinWidthL is the first width of the scaling window,

wherein pps_pic_width_in_luma_samples is the second width of the video picture,

wherein SubWidthC is a chroma width sampling variable of the video picture and obtained from a table according to a chroma format of the video picture,

wherein CurrPicScalWinWidthL = pps_pic_width_in_luma_samples − SubWidthC * (pps_scaling_win_right_offset + pps_scaling_win_left_offset) , and

wherein M is a positive integer value that is greater than or equal to 2; and

wherein the rule specifies that a value of SubHeightC * (pps_scaling_win_top_offset + pps_scaling_win_bottom_offset) is greater than or equal to −pps_pic_height_in_luma_samples * N and less than pps_pic_height_in_luma_samples,

wherein CurrPicScalWinHeightL is the first height of the scaling window,

wherein pps_pic_height_in_luma_samples is the second height of the video picture,

wherein SubHeightC is a chroma height sampling variable of the video picture and obtained from the table according to the chroma format of the video picture,

wherein CurrPicScalWinHeightL = pps_pic_height_in_luma_samples − SubHeightC * (pps_scaling_win_bottom_offset + pps_scaling_win_top_offset), and

wherein N is a positive integer value that is greater than or equal to 2, and N is equal to M,

wherein the rule specifies that a second syntax element is included in a sequence parameter set that the video picture refers to,

wherein the second syntax element indicates whether a reference picture resampling is enabled and whether one or more slices of the video picture are allowed to refer to a reference picture in an active entry in a reference picture list, and

wherein the reference picture has any one or more of multiple parameters that are different than that of the video picture, the multiple parameters include following six parameters: 1) a video picture width, 2) a video picture height, 3) a scaling window left offset, 4) a scaling window right offset, 5) a scaling window top offset, and 6) a scaling window bottom offset, which are specified by the first syntax elements,

wherein the second syntax element having a value of 1 indicates that the reference picture resampling is enabled and that the video picture is allowed to have one or more slices that refer to the reference picture in the active entry in the reference picture list, and

wherein the second syntax element having a value of 0 indicates that the reference picture resampling is disabled and that no slice of the video picture is allowed to refer to the reference picture in the active entry of the reference picture list.

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 the bitstream of the video comprising a video picture according to a rule,

wherein the rule specifies that first syntax elements indicate a first width and a first height of a scaling window for the video picture, and

wherein the rule specifies that a range of permissible values for the first width and the first height that are indicated by the first syntax elements are allowed to be greater than or equal to two times a second width of the video picture and two times a second height of the video picture.

20. The non-transitory computer-readable recording medium of claim 19, wherein values of the first syntax elements specify offsets that are applied to a size of the video picture for scaling ratio calculation, and the first syntax elements include pps_scaling_win_left_offset, pps_scaling_win_right_offset, pps_scaling_win_top_offset, and pps_scaling_win_bottom_offset,

wherein the rule specifies that a value of SubWidthC * (pps_scaling_win_left_offset + pps_scaling_win_right_offset)) is greater than or equal to −pps_pic_width_in_luma_samples * M and less than pps_pic_width_in_luma_samples,

wherein CurrPicScalWinWidthL is the first width of the scaling window,

wherein pps_pic_width_in_luma_samples is the second width of the video picture,

wherein SubWidthC is a chroma width sampling variable of the video picture and obtained from a table according to a chroma format of the video picture,

wherein CurrPicScalWinWidthL = pps_pic_width_in_luma_samples − SubWidthC * (pps_scaling_win_right_offset + pps_scaling_win_left_offset) , and

wherein M is a positive integer value that is greater than or equal to 2; and

wherein the rule specifies that a value of SubHeightC * (pps_scaling_win_top_offset + pps_scaling_win_bottom_offset) is greater than or equal to −pps_pic_height_in_luma_samples * N and less than pps_pic_height_in_luma_samples,

wherein CurrPicScalWinHeightL is the first height of the scaling window,

wherein pps_pic_height_in_luma_samples is the second height of the video picture,

wherein SubHeightC is a chroma height sampling variable of the video picture and obtained from the table according to the chroma format of the video picture,

wherein CurrPicScalWinHeightL = pps_pic_height_in_luma_samples − SubHeightC * (pps_scaling_win_bottom_offset + pps_scaling_win_top_offset), and

wherein N is a positive integer value that is greater than or equal to 2, and N is equal to M,

wherein the rule specifies that a second syntax element is included in a sequence parameter set that the video picture refers to,

wherein the second syntax element indicates whether a reference picture resampling is enabled and whether one or more slices of the video picture are allowed to refer to a reference picture in an active entry in a reference picture list, and

wherein the reference picture has any one or more of multiple parameters that are different than that of the video picture, the multiple parameters include following six parameters: 1) a video picture width, 2) a video picture height, 3) a scaling window left offset, 4) a scaling window right offset, 5) a scaling window top offset, and 6) a scaling window bottom offset, which are specified by the first syntax elements,

wherein the second syntax element having a value of 1 indicates that the reference picture resampling is enabled and that the video picture is allowed to have one or more slices that refer to the reference picture in the active entry in the reference picture list, and

wherein the second syntax element having a value of 0 indicates that the reference picture resampling is disabled and that no slice of the video picture is allowed to refer to the reference picture in the active entry of the reference picture list.