

CLAIMS

What is claimed is:

1. A method of video processing, comprising:
 - performing a conversion between a video unit of a video and a bitstream of the video according to a rule,
 - wherein the rule specifies that whether a cross-component adaptive loop filter (CC-ALF) mode and/or an adaptive loop filter (ALF) mode are enabled for coding the video unit are indicated in the bitstream in a mutually independent manner.
2. The method of claim 1, wherein when the CC-ALF tool is enabled for the video unit, sample values of the video unit of a video component are filtered with sample values of another video component of the video.
3. The method of any of claims 1 to 2, wherein the rule specifies that a first syntax element selectively included in the bitstream indicates whether the CC-ALF mode is enabled for the video unit.
4. The method of claim 3,
 - wherein the first syntax element is indicated in a sequence level or a video level or a picture level associated with the video unit, and
 - wherein the first syntax element is different from another syntax element included in the bitstream that indicates whether the ALF mode is enabled for the video unit.
5. The method of claim 3,
 - wherein the first syntax element is included in the bitstream based on the ALF mode being enabled for the video unit.
6. The method of claim 3, wherein the first syntax element is included in the bitstream in case that a coding condition is met, wherein the coding condition comprises:

a type of color format of the video, or
whether separate plane coding is enabled for the conversion, or
a sampling structure of a chroma component of the video.

7. The method of any of claims 1 to 2,

wherein the rule specifies that the bitstream includes a second syntax element that indicates whether one or more syntax elements related to the CC-ALF mode are present in a picture header, and

wherein the second syntax element is included in the picture header or a picture parameter set (PPS) or a slice header.

8. The method of claim 7, wherein the one or more syntax elements includes at least one of:

a third syntax element that indicates the CC-ALF mode for a Cb color component is enabled for the picture,

a fourth syntax element that indicates an adaptation parameter set (APS) id of an ALF APS referenced by the Cb color component of slices in a picture containing the video unit,

a fifth syntax element that indicates a number of cross component Cb filters,

a sixth syntax element that indicates the CC-ALF mode for a Cr color component is enabled for the picture,

a seventh syntax element that indicates an APS id of an ALF APS referenced by Cr color component of the slices in the picture, or

a eighth syntax element that indicates a number of cross component Cr filters.

9. The method of claim 7,

wherein the rule specifies that the bitstream includes the second syntax element based on the ALF mode being enabled for the video unit.

10. The method of any of claims 1-9, wherein the ALF is a Weiner filter with neighboring samples as input.

11. The method of any of claims 1 to 3,

wherein the rule specifies that the bitstream includes syntax elements in a picture header or in a picture parameter set (PPS) related to the CC-ALF mode based on the chroma format sampling structure is not monochrome and/or a ninth syntax element that indicates that the CC-ALF mode is enabled in a higher level of the video that is higher than that of the video unit.

12. The method of any of claims 1 to 3,

wherein the rule specifies that the bitstream includes syntax elements in a picture header or in a picture parameter set (PPS) related to the CC-ALF mode when:

a value for a chroma array type is not equal to zero or a color format of the video is not 4:0:0, and

the bitstream includes a first syntax element that indicates that the CC-ALF mode is enabled for the video unit, wherein the first syntax element is indicated for a higher level of the video that is higher than that of the video unit.

13. The method of any of claims 1 to 3,

wherein the rule specifies that the bitstream includes syntax elements in a picture header or in a picture parameter set (PPS) or in a slice header related to the CC-ALF mode when:

a value for a chroma array type is not equal to zero or a color format of the video is not 4:0:0, or

the bitstream includes a first syntax element that indicates that the CC-ALF mode is enabled for the video unit, wherein the first syntax element is indicated for a level of the video that is higher than that of the video unit.

14. The method of any of claims 11 to 12, wherein the video level includes a sequence parameter set (SPS).

15. A method of video processing, comprising:

performing a conversion between a video unit of a chroma component a video and a bitstream of the video;

wherein the bitstream conforms to a format rule,

wherein the format rule specifies that the bitstream includes a syntax element indicating whether a cross-component filter for the chroma component is enabled for all slices associated with a picture header only when:

a value for a chroma array type is not equal to zero, or
a color format of the video is not 4:0:0.

16. The method of claim 15, wherein the chroma component includes a Cb chroma component.

17. The method of claim 15, wherein the chroma component includes a Cr chroma component.

18. The method of any of claims 1 to 17, wherein the video unit comprises a coding unit (CU), a prediction unit (PU), or a transform unit (TU).

19. The method of any of claims 1 to 18, wherein the performing the conversion comprising encoding the video into the bitstream.

20. The method of any of claims 1 to 18, wherein the performing the conversion comprises encoding the video into the bitstream, and the method further comprises storing the bitstream in a non-transitory computer-readable recording medium.

21. The method of any of claims 1 to 18, wherein the performing the conversion comprises decoding the video from the bitstream.

22. A method for storing bitstream of a video, comprising:

generating a bitstream of a video from a video unit of the video according to a rule,
storing the bitstream in a non-transitory computer-readable recording medium;

wherein the rule specifies that whether a cross-component adaptive loop filter (CC-ALF) mode and an adaptive loop filter (ALF) mode are enabled for coding the video unit are indicated in the bitstream in a mutually independent manner.

23. A video decoding apparatus comprising a processor configured to implement a method recited in one or more of claims 1 to 22.

24. A video encoding apparatus comprising a processor configured to implement a method recited in one or more of claims 1 to 22.

25. A computer program product having computer instructions stored thereon, the instructions, when executed by a processor, causes the processor to implement a method recited in any of claims 1 to 22.

26. A non-transitory computer-readable storage medium that stores a bitstream generated according to the method in any one of claims 1 to 22.

27. A non-transitory computer-readable storage medium storing instructions that cause a processor to implement a method recited in any of claims 1 to 22.