

CLAIMS

1. A method of filtering a sample value of a picture,
wherein the method comprises:
 - 5 obtaining a reconstructed sample value for a block of the picture;
obtaining filter coefficients for adaptive loop filtering according to a bitstream;
obtaining a sum value according to the filter coefficients and the reconstructed sample
value for the block;
rounding the sum value according to a vertical position of a sample in the block, to
10 obtain a rounded sum value;
obtaining a filter reconstructed sample value for the block according to the rounded sum
value.
2. The method of claim 1, wherein the rounded sum value is equal to
15 $(\text{sum} + (1 \ll (\text{alfShiftY} - 1))) \gg \text{alfShiftY}$, wherein sum is the sum value, alfShiftY is
a variable which is determined based on the vertical position of the sample.
3. The method of claim 2, wherein alfShiftY is equal to 10 when the vertical position of the
sample is satisfied any one of the below conditions:
 - 20 $y = \text{CtbSizeY} - t - 1$, or
 $y = \text{CtbSizeY} - t$, or
 $y = \text{ctbHeightC} - t$, or
 $y = \text{ctbHeightC} - t - 1$,
wherein y is the vertical position of the sample, CtbSizeY is a coding tree block, CTB,
25 size, ctbHeightC is the height of the CTB, t is an integer value.

4. The method of claim 2 or 3, wherein alfShiftY is equal to 7 when the vertical position of the sample is not satisfied any one of the below conditions:

$$y == \text{CtbSizeY} - t - 1, \text{ or}$$

$$y == \text{CtbSizeY} - t, \text{ or}$$

5 $y == \text{ctbHeightC} - t, \text{ or}$

$$y == \text{ctbHeightC} - t - 1,$$

wherein y is the vertical position of the sample, CtbSizeY is a coding tree block, CTB, size, ctbHeightC is the height of the CTB, t is an integer value.

10 5. The method of any one of claims 2 to 4, wherein when y is equal to 0, alfShiftY is equal to 10.

6. The method of any one of claims 2 to 5, wherein when y is not equal to 0, alfShiftY is equal to 7.

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7. The method of any one of claims 1 to 6, wherein the vertical position of the sample in the block is a chroma sample position or is a luma sample position.

8. The method of any one of claims 1 to 7, wherein the rounding process comprises:

20 adding a value which is determined based on the vertical position to the sum value in order to obtain an added sum value, and

shifting the added sum value based on the vertical position.

9. A video decoding apparatus, comprising:

25 a reconstructing module, which is configured to obtain a reconstructed sample value for a block of a picture;

a parsing module, which is configured to obtain filter coefficients for adaptive loop filtering according to a bitstream;

a calculating module, which is configured to obtain a sum value according to the filter coefficients and the reconstructed sample value for the block;

5 a rounding module, which is configured to round the sum value according to a vertical position of a sample in the block, to obtain a rounded sum value;

a filtering module, which is configured to obtain a filter reconstructed sample value for the block according to the rounded sum value.

10 10. The video decoding apparatus of claim 9, wherein the rounded sum value is equal to $(\text{sum} + (1 \ll (\text{alfShiftY} - 1))) \gg \text{alfShiftY}$, wherein sum is the sum value, alfShiftY is a variable which is determined based on the vertical position of the sample.

11. The video decoding apparatus of claim 10, wherein alfShiftY is equal to 10 when the
15 vertical position of the sample is satisfied any one of the below conditions:

$y == \text{CtbSizeY} - t - 1$, or

$y == \text{CtbSizeY} - t$, or

$y == \text{ctbHeightC} - t$, or

$y == \text{ctbHeightC} - t - 1$,

20 wherein y is the vertical position of the sample, CtbSizeY is a coding tree block, CTB, size, ctbHeightC is the height of the CTB, t is an integer value.

12. The video decoding apparatus of claim 10 or 11, wherein alfShiftY is equal to 7 when the vertical position of the sample is not satisfied any one of the below conditions:

25 $y == \text{CtbSizeY} - t - 1$, or

$y == \text{CtbSizeY} - t$, or

$y = \text{ctbHeightC} - t$, or

$y = \text{ctbHeightC} - t - 1$,

wherein y is the vertical position of the sample, CtbSizeY is a coding tree block, CTB, size, ctbHeightC is the height of the CTB, t is an integer value.

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13. The video decoding apparatus of any one of claims 10 to 12, wherein when y is equal to 0, alfShiftY is equal to 10.

14. The video decoding apparatus of any one of claims 10 to 14, wherein when y is not equal
10 to 0, alfShiftY is equal to 7.

15. The video decoding apparatus of any one of claims 9 to 14, wherein the vertical position of the sample in the block is a chroma sample position or is a luma sample position.

15 16. The video decoding apparatus of any one of claims 9 to 15, wherein the rounding module is configured to

add a value which is determined based on the vertical position to the sum value in order to obtain an added sum value, and shift the added sum value based on the vertical position, to obtain the rounded sum value.

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17. A decoder, comprising:

one or more processors; and

a non-transitory computer-readable storage medium coupled to the processors and storing programming for execution by the processors, wherein the programming, when
25 executed by the processors, configures the decoder to carry out the method according to any one of the claims 1 to 8.

18. A non-transitory computer-readable medium carrying a program code which, when executed by a computer device, causes the computer device to perform the method of any one of the claims 1 to 8.

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