

CLAIMS

1. A method of intra Planar prediction in a picture, comprising:

calculating a value of a vertical component of an intra prediction sample included in a block of the picture, wherein the value of the vertical component $\text{predV}[x][y]$ is:

$$\text{predV}[x][y] = ((nTbH - 1 - y) * p[x][-1] + (y + 1) * p[-1][nTbH]) \ll \text{Log2}(nTbW);$$

calculating a value of a horizontal component of the intra prediction sample, wherein the value of the horizontal component $\text{predH}[x][y]$ is:

$$\text{predH}[x][y] = ((nTbW - 1 - x) * p[-1][y] + (x + 1) * p[nTbW][-1]) \ll \text{Log2}(nTbH); \text{ and}$$

generating the intra prediction sample $\text{predSamples}[x][y]$ based on the value of the vertical component and the value of the horizon component,

wherein $nTbH$ represents the height of the block, $nTbW$ represents the width of the block, $p[x][y]$ represents neighbouring samples with $x = -1, y = -1..nTbH$ and $x = 0..nTbW, y = -1$.

2. The method of claim 1, wherein the intra prediction sample $\text{predSamples}[x][y]$ is:

$$\text{predSamples}[x][y] = (\text{predV}[x][y] + \text{predH}[x][y] + nTbW * nTbH) \gg (\text{Log2}(nTbW) + \text{Log2}(nTbH) + 1).$$

3. The method of claim 1 or 2, wherein the bottom reference sample row of the block is padded by $p[-1][nTbH]$.

4. The method of claim 1 or 2, wherein the right reference sample column of the block is padded by $p[nTbW][-1]$.

5. The method of claims 1 to 3, wherein when the height of the block is equal to 1,

$$\text{predV}[x][y] = ((y + 1) * p[-1][nTbH]) \ll \text{Log2}(nTbW)$$

$$\text{predH}[x][y] = ((nTbW - 1 - x) * p[-1][y] + (x + 1) * p[nTbW][-1])$$

$$\text{predSamples}[x][y] = (\text{predV}[x][y] + \text{predH}[x][y] + nTbW) \gg (\text{Log2}(nTbW)$$

5 +1).

6. A method of intra Planar prediction with a height of a block equal to 1, comprising:

calculating a value of a vertical component of an intra prediction sample, wherein the

value of the vertical component $\text{predV}[x][y]$ is

$$10 \quad \text{predV}[x][y] = ((y + 1) * p[-1][nTbH]) \ll \text{Log2}(nTbW);$$

calculating a value of a horizon component of the intra prediction sample, wherein the

value of the horizontal component $\text{predH}[x][y]$ is

$$\text{predH}[x][y] = ((nTbW - 1 - x) * p[-1][y] + (x + 1) * p[nTbW][-1]); \text{ and}$$

generating the intra prediction sample based on the value of the vertical component and

15 the value of the horizon component,

wherein nTbH represents the height of the block, nTbW represents the width of the block,

$p[x][y]$ represents neighbouring samples with $x = -1, y = -1..nTbH$ and

$x = 0..nTbW, y = -1$.

20 7. The method of claim 6, wherein the intra prediction sample is calculated by:

$$\text{predSamples}[x][y] = (\text{predV}[x][y] + \text{predH}[x][y] + nTbW) \gg (\text{Log2}(nTbW)$$

+1).

8. The method of claim 6 or 7, wherein the bottom reference sample row of the

25 prediction block is padded by $p[-1][nTbH]$.

9. A method of coding implemented by a decoding device, comprising:

obtaining the height and width of a current block without applying clipping operation;

calculating a value of a vertical component of an intra prediction sample based on the

5 height and width of the prediction block;

calculating a value of a horizontal component of the intra prediction sample based on the height and width of the prediction blocks; and

generating the intra prediction sample based on the value of the vertical component and the value of the horizontal component.

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10. The method of claim 9, wherein the value of the vertical component $\text{predV}[x][y]$ is calculated by:

$$\text{predV}[x][y] = ((nTbH - 1 - y) * p[x][-1] + (y + 1) * p[-1][nTbH]) \ll \text{Log2}(nTbW),$$

15 wherein $\text{predV}[x][y]$ represents the value of the vertical component with $x = 0..nTbW - 1$, $y = 0..nTbH - 1$, $nTbH$ represents the height of the current block, $nTbW$ represents the width of the current block.

11. The method of claim 9 or 10, wherein the value of the horizon component $\text{predH}[x][y]$ is calculated by:

$$\text{predH}[x][y] = ((nTbW - 1 - x) * p[-1][y] + (x + 1) * p[nTbW][-1]) \ll \text{Log2}(nTbH);$$

wherein $x = 0..nTbW - 1$, $y = 0..nTbH - 1$, $nTbH$ represents the height of the current block, $nTbW$ represents the width of the current block.

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12. The method of any one claims 9-11, wherein the intra prediction sample

predSamples[x][y] is generated by:

$$\text{predSamples}[x][y] = (\text{predV}[x][y] + \text{predH}[x][y] + n_{TbW} * n_{TbH}) \gg (\text{Log2}(n_{TbW}) + \text{Log2}(n_{TbH}) + 1).$$

5 13. The method of any one of claims 9-12, wherein the bottom reference sample row of the prediction block is padded by $p[-1][n_{TbH}]$.

14. The method of any one of claims 9-13, wherein the width of the prediction block is obtained without applying clipping operation $nW = \text{Max}(n_{TbW}, 2)$.

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15. The method of any one of claims 9-14, wherein the height of the prediction block is obtained without applying clipping operation $nH = \text{Max}(n_{TbH}, 2)$.

16. An encoder (20) comprising processing circuitry for carrying out the method according to
15 any one of claims 1 to 15.

17. A decoder (30) comprising processing circuitry for carrying out the method according to any one of claims 1 to 15.

20 18. A computer program product comprising a program code for performing the method according to any one of claims 1 to 15.

19. A decoder, comprising:

one or more processors; and

25 a non-transitory computer-readable storage medium coupled to the processors and storing programming for execution by the processors, wherein the programming, when executed by

the processors, configures the decoder to carry out the method according to any one of claims 1 to 15.

20. An encoder, comprising:

5 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 executed by the processors, configures the encoder to carry out the method according to any one of claims 1 to 15.

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21. A device of intra Planar prediction in a picture, comprising:

a calculating unit (902), configured to calculate a value of a vertical component of an intra prediction sample included in a block of the picture, and calculate a value of a horizon component of the intra prediction sample, wherein the value of the vertical component

15 $\text{predV}[x][y]$ is:

$\text{predV}[x][y] = ((nTbH - 1 - y) * p[x][-1] + (y + 1) * p[-1][nTbH]) \ll \text{Log2}(nTbW)$, and the value of the horizontal component $\text{predH}[x][y]$ is:

$\text{predH}[x][y] = ((nTbW - 1 - x) * p[-1][y] + (x + 1) * p[nTbW][-1]) \ll \text{Log2}(nTbH)$, $nTbH$ representing the height of the block, $nTbW$ representing the width of the block,

20 $p[x][y]$ represents neighbouring samples with $x = -1, y = -1..nTbH$ and $x = 0..nTbW, y = -1$;

a predicting unit (903), configured to generate the intra prediction sample based on the value of the vertical component and the value of the horizon component.

25 22. The device of claim 21, wherein the predicting unit (903), configured to generate the intra prediction sample by:

$\text{predSamples}[x][y] = (\text{predV}[x][y] + \text{predH}[x][y] + \text{nTbW} * \text{nTbH}) \gg (\text{Log2}(\text{nTbW}) + \text{Log2}(\text{nTbH}) + 1).$

23. The device of claim 21 or 22, wherein the device further comprises a padding unit (904),
 5 the padding unit (904) configured to pad the left reference sample column of the block by $p[\text{nTbW}][-1]$; or pad the bottom reference sample row of the block by $p[-1][\text{nTbH}]$.

24. The device of any one of claim 21-23, when the height of the prediction block is equal to
 1, the calculating unit (902), configured to calculate the value of the vertical component and
 10 the value of the horizon component by:

$$\text{predV}[x][y] = ((y + 1) * p[-1][\text{nTbH}]) \ll \text{Log2}(\text{nTbW})$$

$$\text{predH}[x][y] = ((\text{nTbW} - 1 - x) * p[-1][y] + (x + 1) * p[\text{nTbW}][-1]) \ll \text{Log2}(\text{nTbH}).$$

25. The device of any one of claim 21-23, when the width of the prediction block is equal to
 15 1, the calculating unit (902), configured to calculate the value of the vertical component and
 the value of the horizon component by:

$$\text{predV}[x][y] = ((\text{nTbH} - 1 - y) * p[x][-1] + (y + 1) * p[-1][\text{nTbH}]) \ll \text{Log2}(\text{nTbW}).$$

$$\text{predH}[x][y] = ((x + 1) * p[\text{nTbW}][-1]) \ll \text{Log2}(\text{nTbH}).$$

20 26. The device of any one of claim 21-25, wherein the device is a decoder or an encoder.