

CLAIMS

1. A method for predicting an image, comprising:
determining prediction parameters of a current block in a bitstream;
determining a matrix-based intra prediction (MIP) input sample of the current block based
5 on neighboring samples of the current block and the prediction parameters,
setting a shifting number parameter (sW) as a first fixed value;
setting a shifting offset parameter (fO) as a second fixed value;
determining an MIP prediction sample (predMip[x][y]) of the current block based on an
MIP weight matrix, the MIP input sample, the shifting offset parameter (fO), and the shifting
10 number parameter (sW); and
performing an upsampling process to the MIP prediction sample of the current block so as
to generate intra predicted samples (predSamples[x][y]) of the current block,
wherein the first fixed value and the second fixed value are set as constant values
independently of a size of the current block and an MIP mode.
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2. The method of claim 1, wherein the first fixed value is 6.
3. The method of claim 1, wherein the MIP prediction sample of the current block includes
prediction values for a portion of samples of the current block.
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4. The method of claim 1, wherein the neighboring samples include at least one of a left-
neighboring sample or an above-neighboring sample.
5. The method of claim 1, further comprising:
25 determining a first constant value based on the shifting number parameter (sW), the first
constant value being “ $1 \ll (sW-1)$.”
6. The method of claim 1, further comprising:
determining an offset value (oW) based on the MIP input sample, the shifting number
30 parameter (sW), and the shifting offset parameter (fO).
7. The method of claim 1, wherein the prediction parameters include a size identifier
(mipSizeId) of the current block.

8. The method of claim 7, further comprising:

performing a downsampling process to the neighboring samples to generate a temporary reference array (pTemp[x]) based on the size identifier.

5 9. The method of claim 8, further comprising:

determining a second constant value based on a bit depth (BitDepth) of the neighboring samples, in an event that the size identifier is in a predetermined range.

10 10. The method of claim 9, further comprising:

generating the MIP input sample (p[x]) based on the second constant value and the temporary array (pTemp[x]), the second constant value being “ $1 \ll (\text{BitDepth} - 1)$ ”.

11. A decoding apparatus for decoding a picture, comprising:

15 a parsing unit configured to parse a bitstream to determine a prediction mode of a coding block; and

an intra prediction unit configured to

determine a matrix-based intra prediction (MIP) input sample of the coding block based on neighboring samples of the coding block and prediction parameters of the coding block;

20 set a shifting number parameter (sW) as a first fixed value;

set a shifting offset parameter (fO) as a second fixed value;

determine an MIP weight matrix of the coding block based on the prediction parameters;

25 determine an MIP prediction sample of the coding block based on the MIP weight matrix, the MIP input sample, the shifting offset parameter (fO), and the shifting number parameter (sW); and

perform an upsampling process to the MIP prediction sample so as to generate intra predicted samples of the coding block,

30 wherein the first fixed value and the second fixed value are set as constant values independently of a size of the coding block and an MIP mode.

12. The apparatus of claim 11, wherein the first fixed value is 6.

13. A method for encoding a picture, comprising:

receiving an input picture and dividing the input picture into one or more coding blocks;
 determining a matrix-based intra prediction (MIP) input sample of the coding block based
 on neighboring samples of the coding block and prediction parameters of the coding block;
 setting a shifting number parameter (sW) as a first fixed value;
 5 setting a shifting offset parameter (fO) as a second fixed value;
 determining an MIP weight matrix of the coding block based on the prediction parameters;
 determining an MIP prediction sample of the coding block based on the MIP weight matrix,
 the MIP input sample, the shifting offset parameter (fO), and the shifting number parameter
 (sW); and
 10 performing an upsampling process to the MIP prediction sample so as to generate intra
 predicted samples of the coding block,
 wherein the first fixed value and the second fixed value are set as constant values
 independently of a size of the coding block and an MIP mode.

15 14. An encoding apparatus for encoding a picture, comprising:
 a partition unit configured to receive an input picture and divide the input picture into one
 or more coding blocks; and
 a prediction unit configured to
 determine a matrix-based intra prediction (MIP) input sample of the coding block
 20 based on neighboring samples of the coding block and prediction parameters of the coding
 block;
 set a shifting number parameter (sW) as a first fixed value;
 set a shifting offset parameter (fO) as a second fixed value;
 determine an MIP weight matrix of the coding block based on the prediction
 25 parameters;
 determine an MIP prediction sample of the coding block based on the MIP weight
 matrix, the MIP input sample, the shifting offset parameter (fO), and the shifting number
 parameter (sW); and
 perform an upsampling process to the MIP prediction sample so as to generate intra
 30 predicted samples of the coding block,
 wherein the first fixed value and the second fixed value are set as constant values
 independently of a size of the coding block and an MIP mode.