

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.
2. The method of claim 1, wherein the first fixed value is 6.
- 15 3. The method of claim 1, wherein the second fixed value is 23, 32, 34, or 46.
4. 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.
- 20 5. The method of claim 1, wherein the neighboring samples include at least one of a left-
neighboring sample or an above-neighboring sample.
6. 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 “ $1 \ll (sW-1)$.”
7. 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).
8. The method of claim 1, wherein the prediction parameters include a size identifier
(mipSizeId) of the current block.

9. The method of claim 8, further comprising:
performing a downsampling process to the neighboring samples to generate a temporary reference array (pTemp[x]) based on the size identifier.

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10. The method of claim 9, 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 11. The method of claim 10, 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 “ $1 \ll (\text{BitDepth} - 1)$ ”.

12. 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;
determine an MIP prediction sample of the coding block based on the MIP weight
25 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 13. The apparatus of claim 12, wherein the first fixed value is 6, and the second fixed value is 23, 32, 34, or 46.

14. 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.

15. An encoding apparatus for encoding a picture, comprising:
a partition unit configured to receive an input picture and divide the input picture into one
15 or more coding blocks; and
a 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;
set a shifting number parameter (sW) as a first fixed value;
20 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;
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
25 parameter (sW); and
perform an upsampling process to the MIP prediction sample so as to generate intra
predicted samples of the coding block.