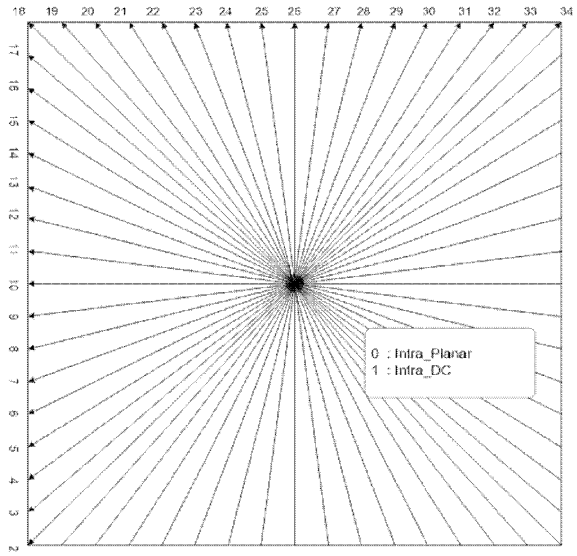

FIG. 1

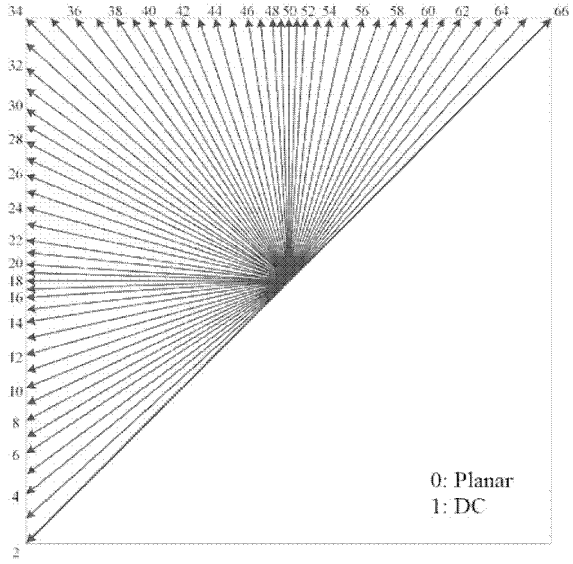

FIG. 2

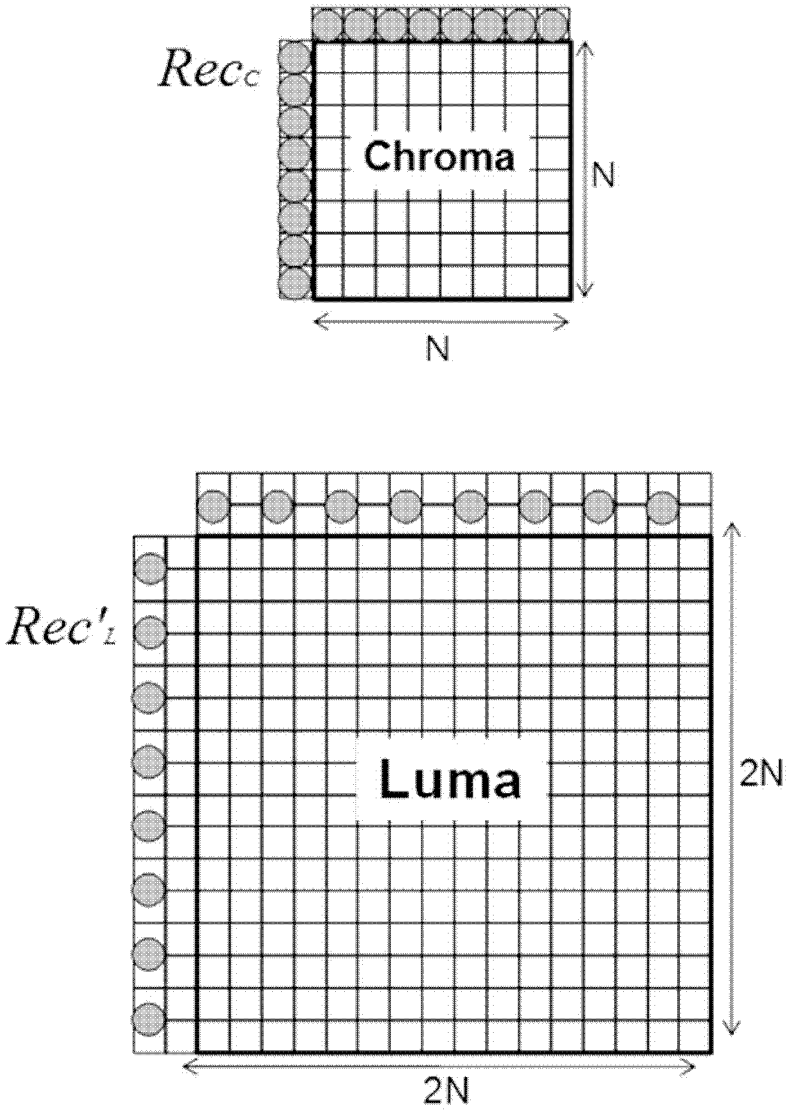

FIG. 3

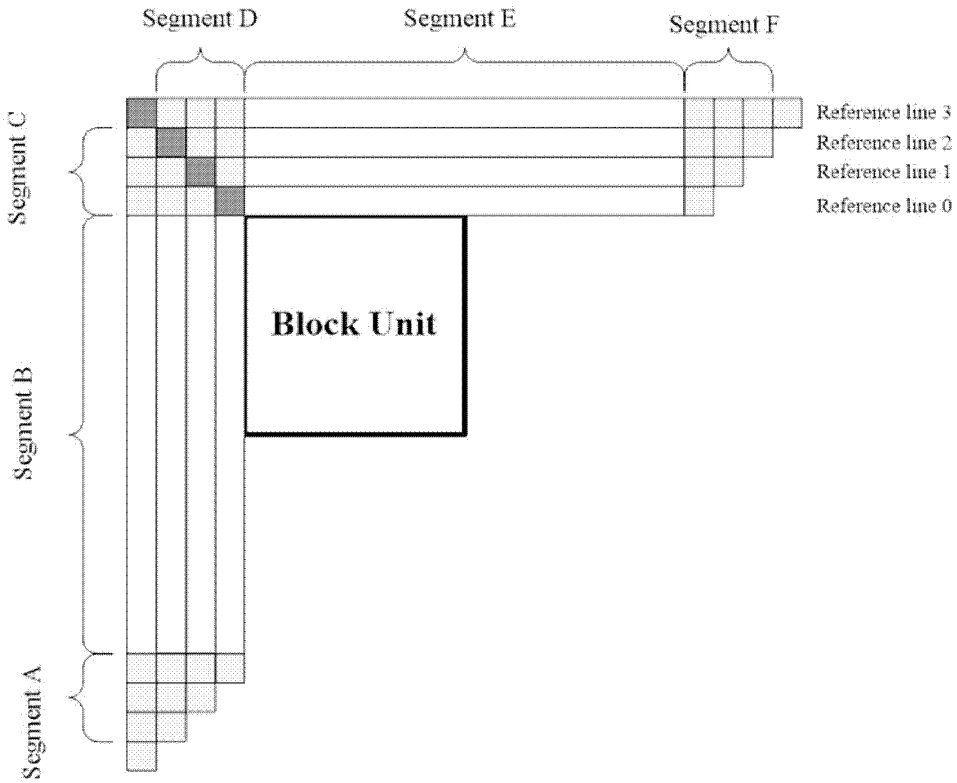
Segment D
Segment E
Segment F
Segment C
Segment B
Segment A
Reference line 3
Reference line 2
Reference line 1
Reference line 0
Block Unit

FIG. 4

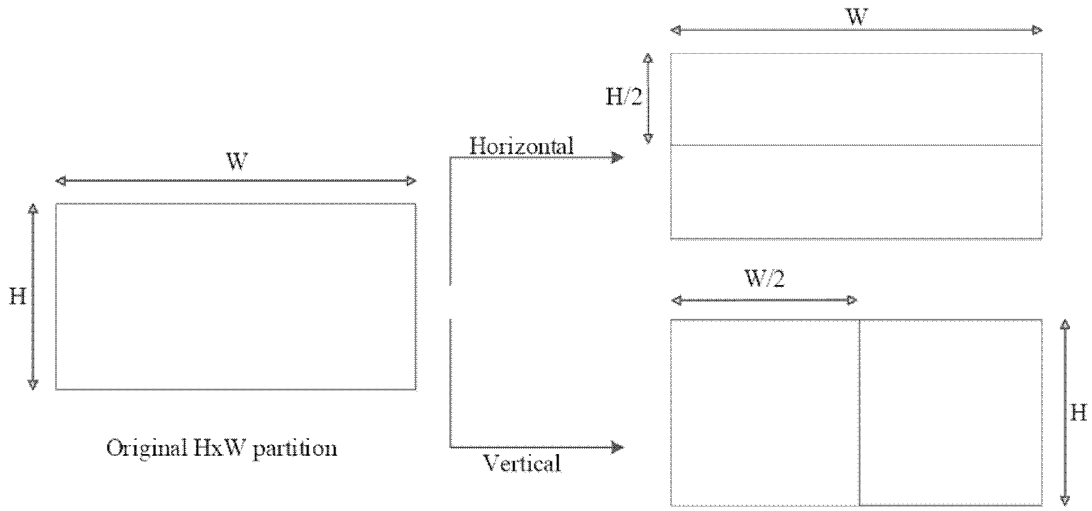
W
H
Original HxW partition
Horizontal
Vertical
W
H/2
W/2
H

FIG. 5A

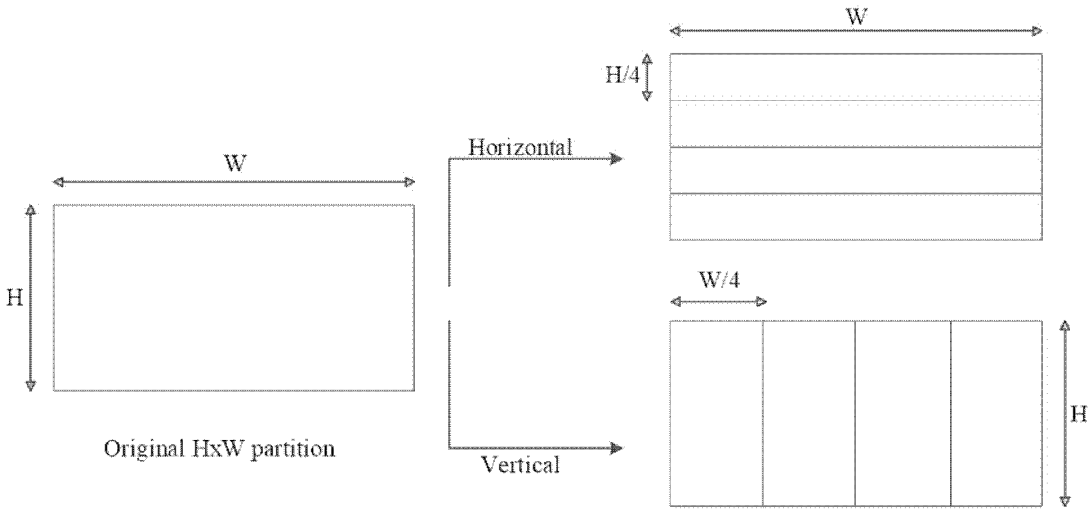
W
H
Original HxW partition
Horizontal
Vertical
W
H/4
W/4
H

FIG. 5B

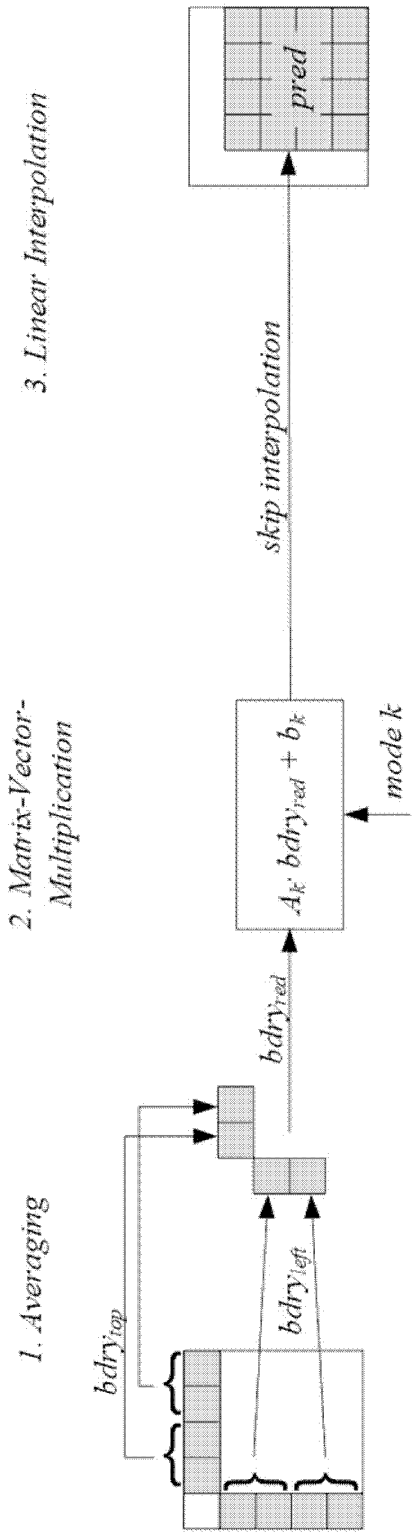
1. Averaging
2. Matrix-Vector-Multiplication
3. Linear Interpolation
$bdry_{top}$
$bdry_{left}$
$bdry_{red}$
$A_k \cdot bdry_{red} + b_k$
mode k
skip interpolation
pred

FIG. 6

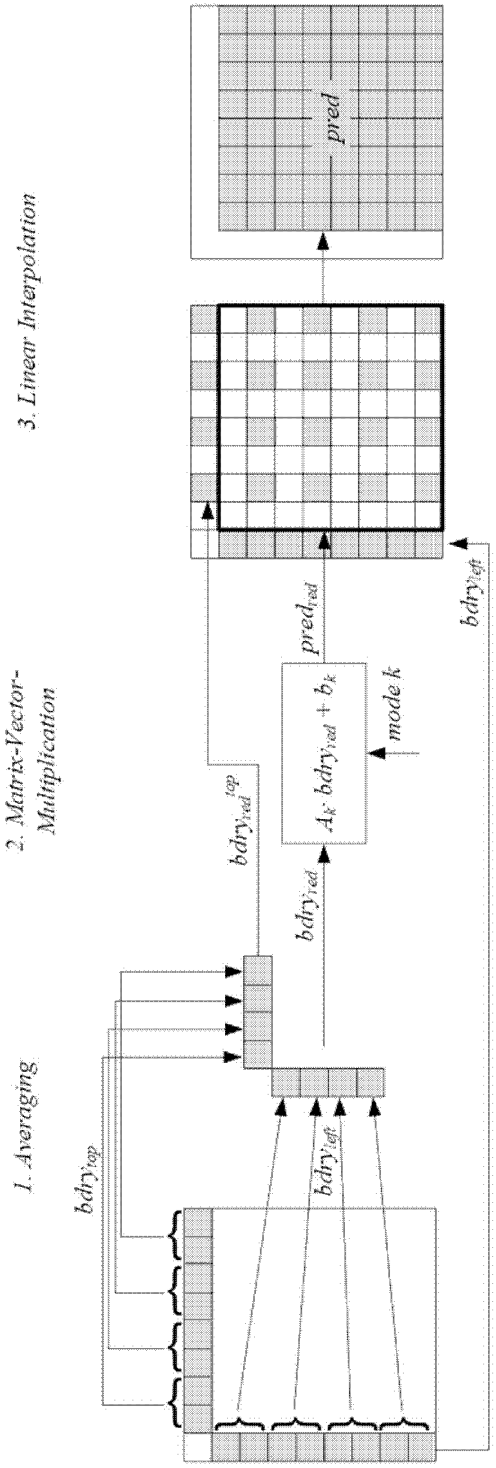
1. Averaging
2. Matrix-Vector-Multiplication
3. Linear Interpolation
$bdry_{top}$
$bdry_{left}$
$bdry_{red}^{top}$
$bdry_{red}^{left}$
$A_k \cdot bdry_{red} + b_k$
mode k
$pred_{red}$
pred
$bdry_{left}$

FIG. 7

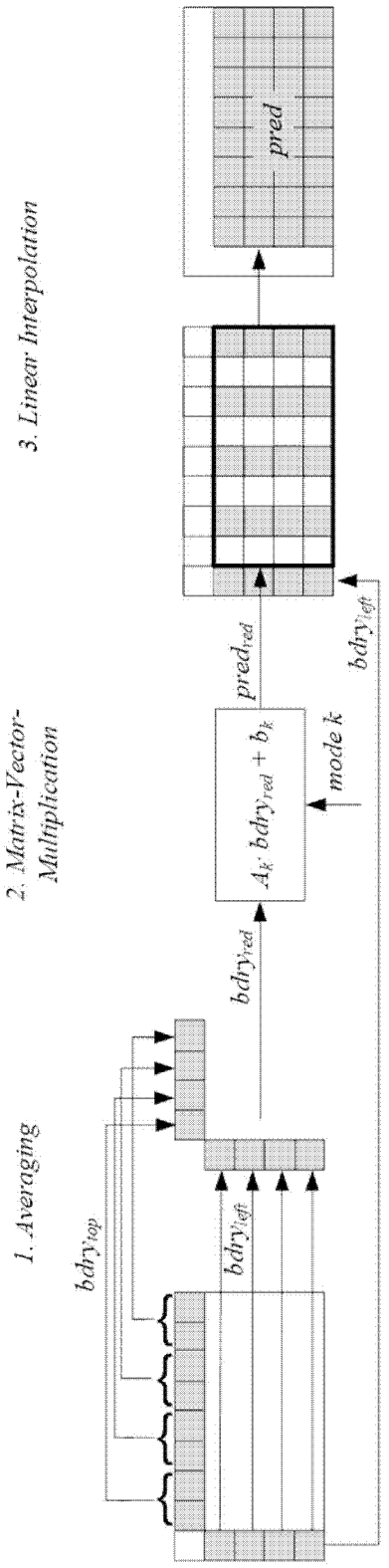
1. Averaging
2. Matrix-Vector-Multiplication
3. Linear Interpolation
$bdry_{top}$
$bdry_{left}$
$bdry_{red}$
$A_k \cdot bdry_{red} + b_k$
mode k
$pred_{red}$
$bdry_{left}$
pred

FIG. 8

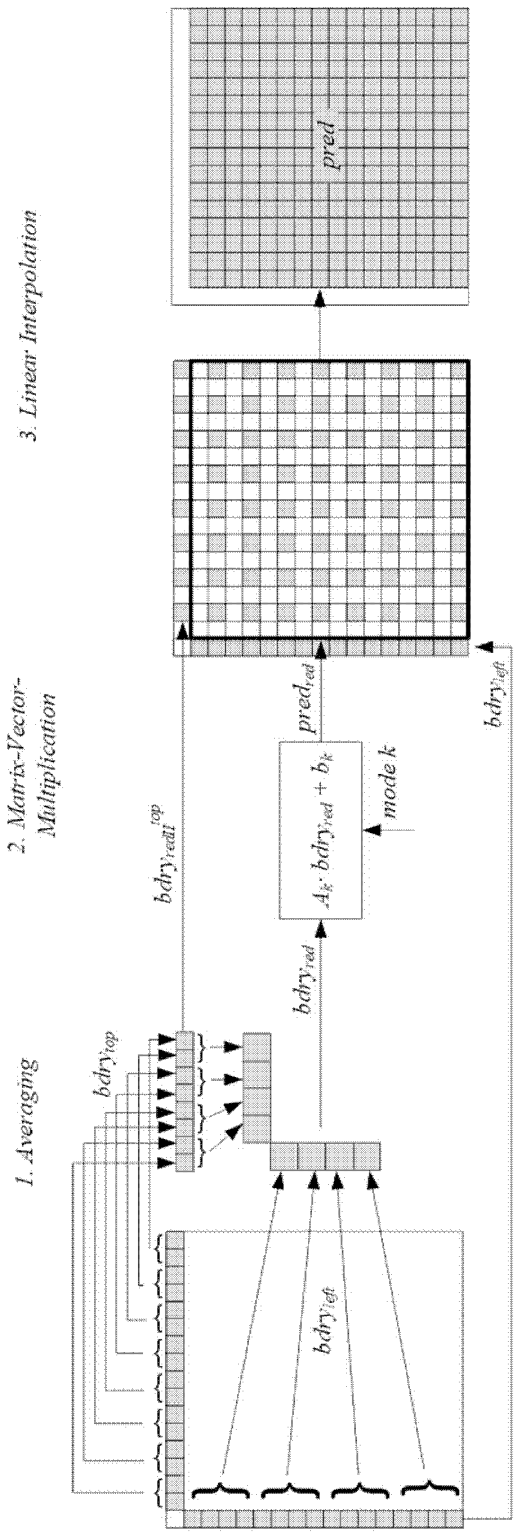
1. Averaging
2. Matrix-Vector-Multiplication
3. Linear Interpolation
pred
$bdry_{left}$
$bdry_{top}$
$bdry_{red}$
$bdry_{red}^{top}$
$A_k \cdot bdry_{red} + b_k$
mode k
$pred_{red}$

FIG. 9

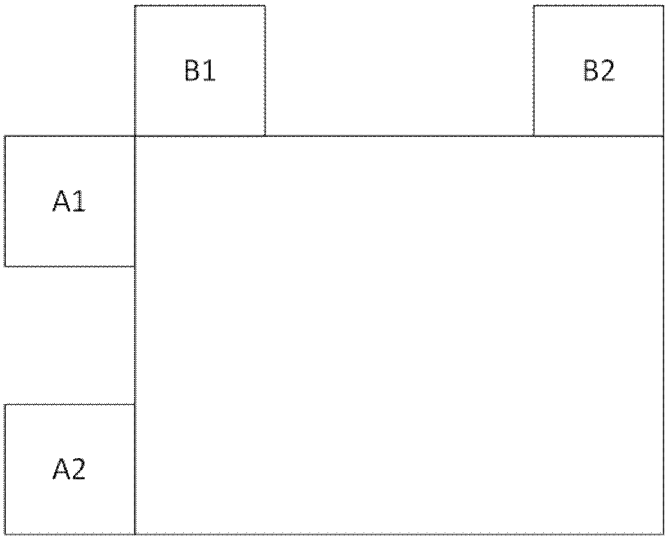

FIG. 10

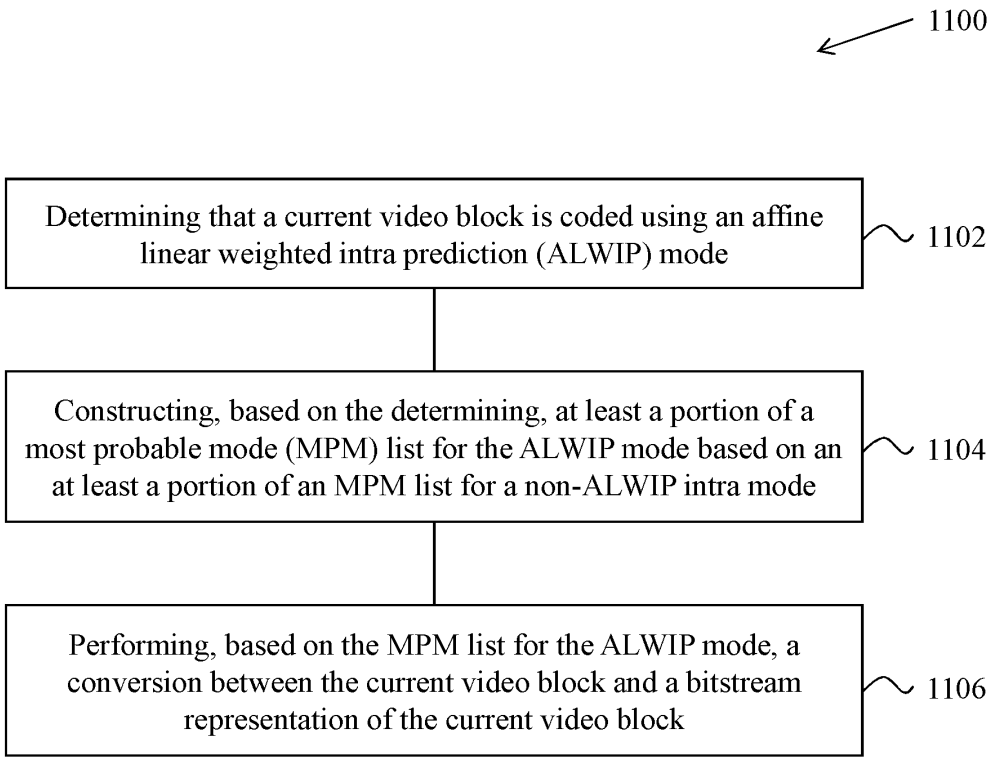
1100
Determining that a current video block is coded using an affine linear weighted intra prediction (ALWIP) mode
1102
Constructing, based on the determining, at least a portion of a most probable mode (MPM) list for the ALWIP mode based on an at least a portion of an MPM list for a non-ALWIP intra mode
1104
Performing, based on the MPM list for the ALWIP mode, a conversion between the current video block and a bitstream representation of the current video block
1106

FIG. 11

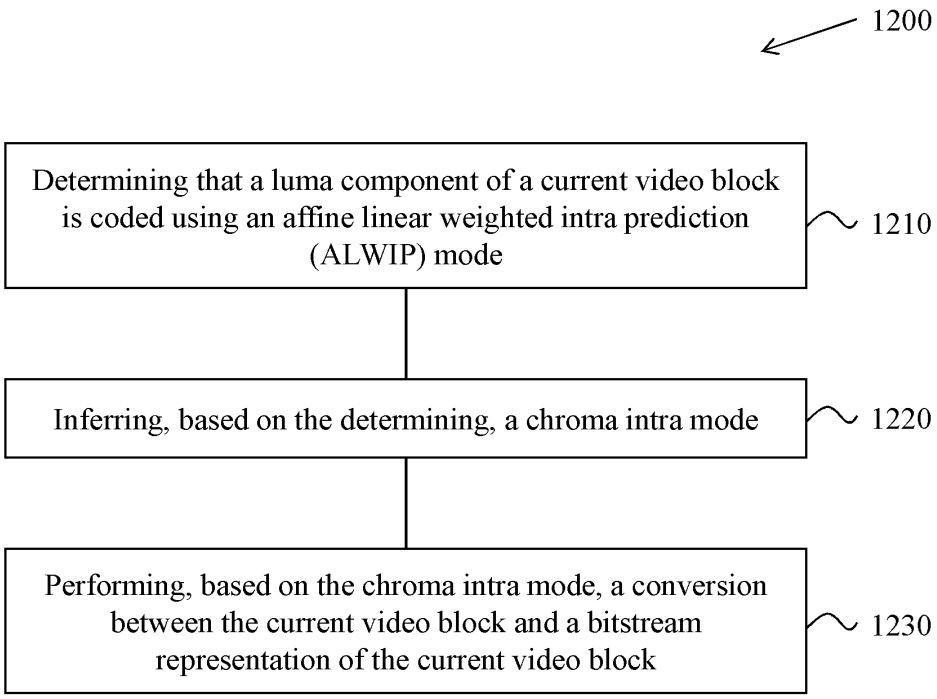
1200
Determining that a luma component of a current video block is coded using an affine linear weighted intra prediction (ALWIP) mode
1210
Inferring, based on the determining, a chroma intra mode
1220
Performing, based on the chroma intra mode, a conversion between the current video block and a bitstream representation of the current video block
1230

FIG. 12

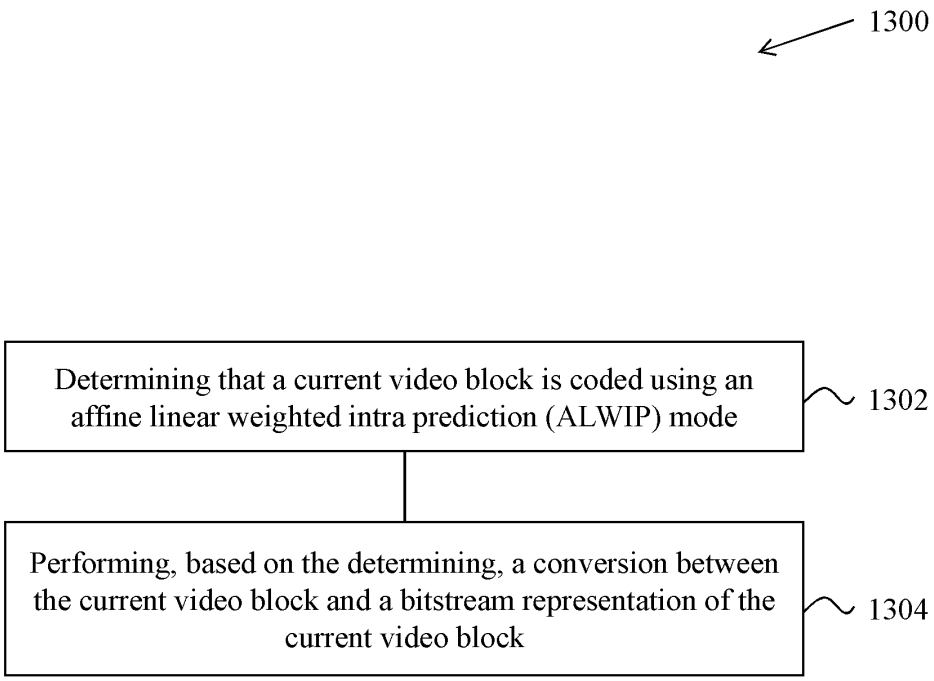
1300
Determining that a current video block is coded using an affine linear weighted intra prediction (ALWIP) mode
1302
Performing, based on the determining, a conversion between the current video block and a bitstream representation of the current video block
1304

FIG. 13

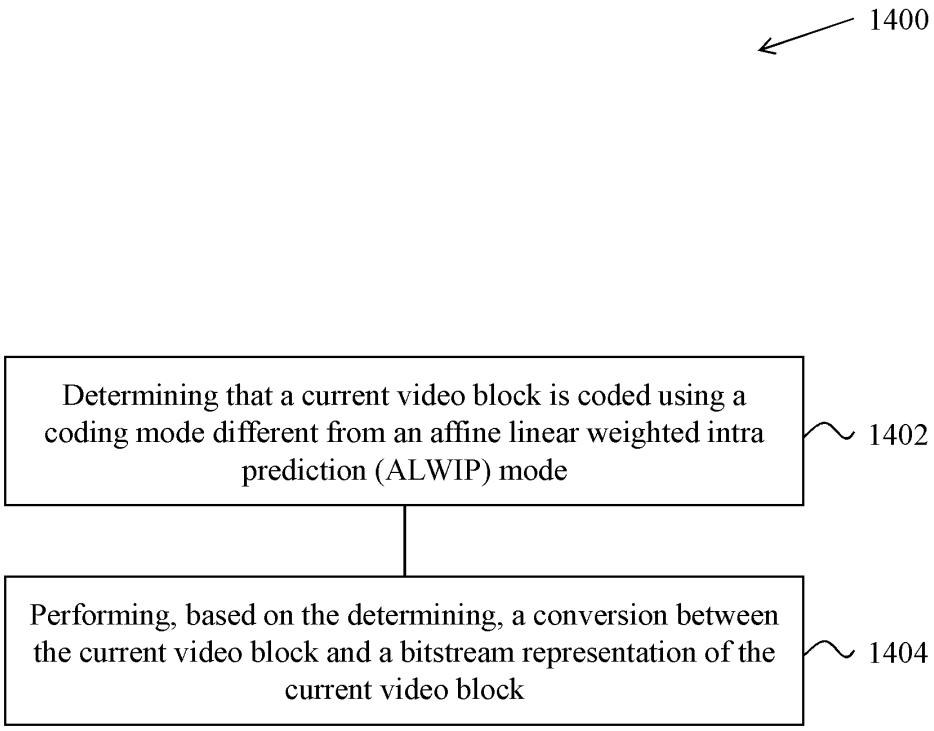
1400
Determining that a current video block is coded using a coding mode different from an affine linear weighted intra prediction (ALWIP) mode
1402
Performing, based on the determining, a conversion between the current video block and a bitstream representation of the current video block
1404

FIG. 14

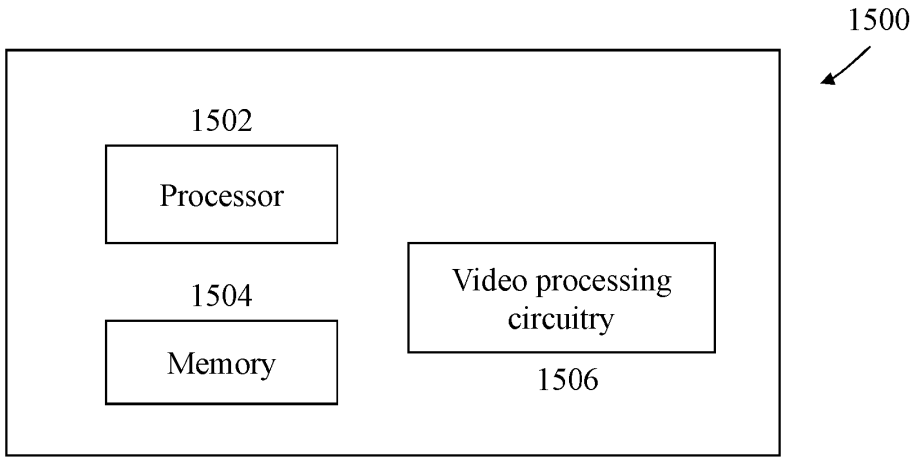
1500
1502
Processor
1504
Memory
Video processing circuitry
1506

FIG. 15

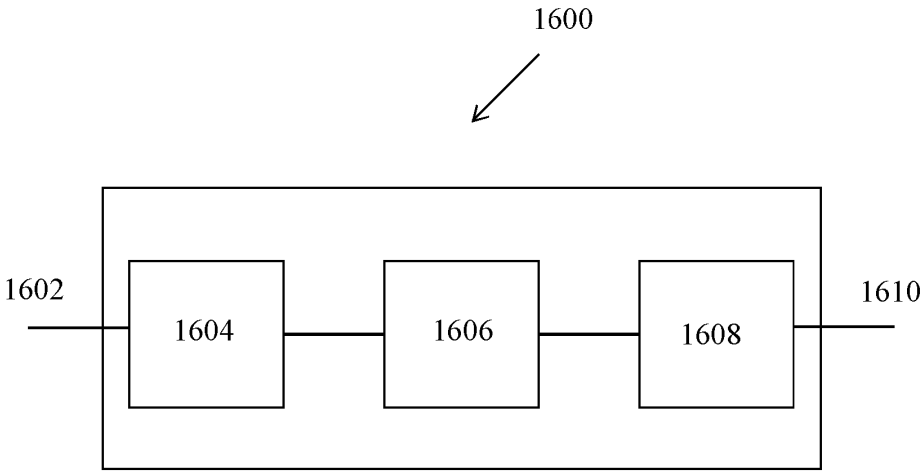

FIG. 16

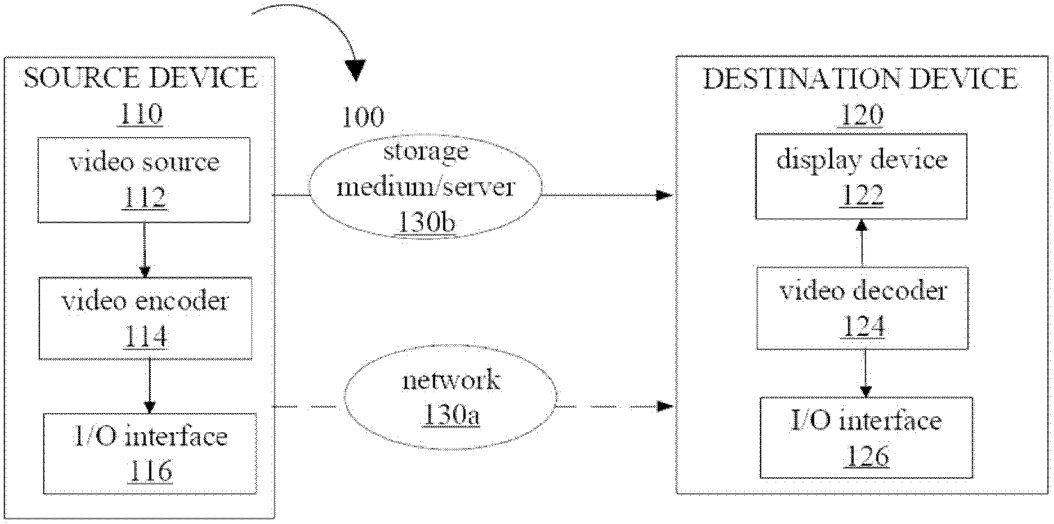
SOURCE DEVICE
110
video source
112
video encoder
114
I/O interface
116
100
storage
medium/server
130b
network
130a
DESTINATION DEVICE
120
display device
122
video decoder
124
I/O interface
126

FIG. 17

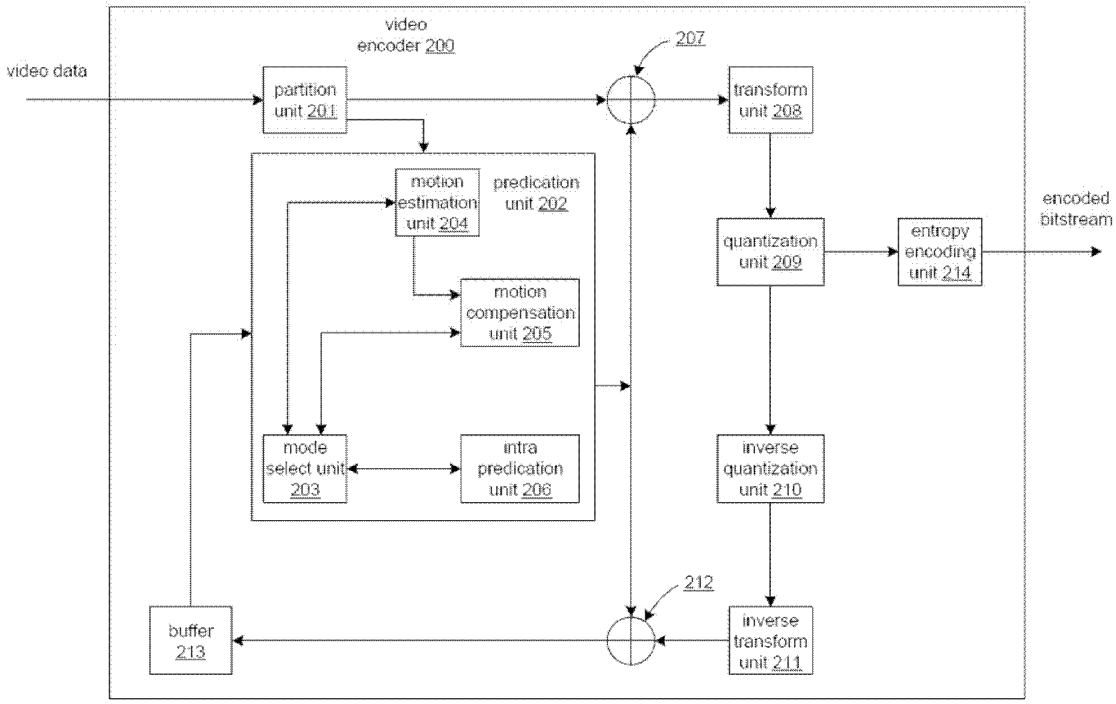
video data
video encoder 200
partition unit 201
207
transform unit 208
motion estimation unit 204
predication unit 202
motion compensation unit 205
quantization unit 209
entropy encoding unit 214
encoded bitstream
mode select unit 203
intra predication unit 206
inverse quantization unit 210
212
buffer 213
inverse transform unit 211

FIG. 18

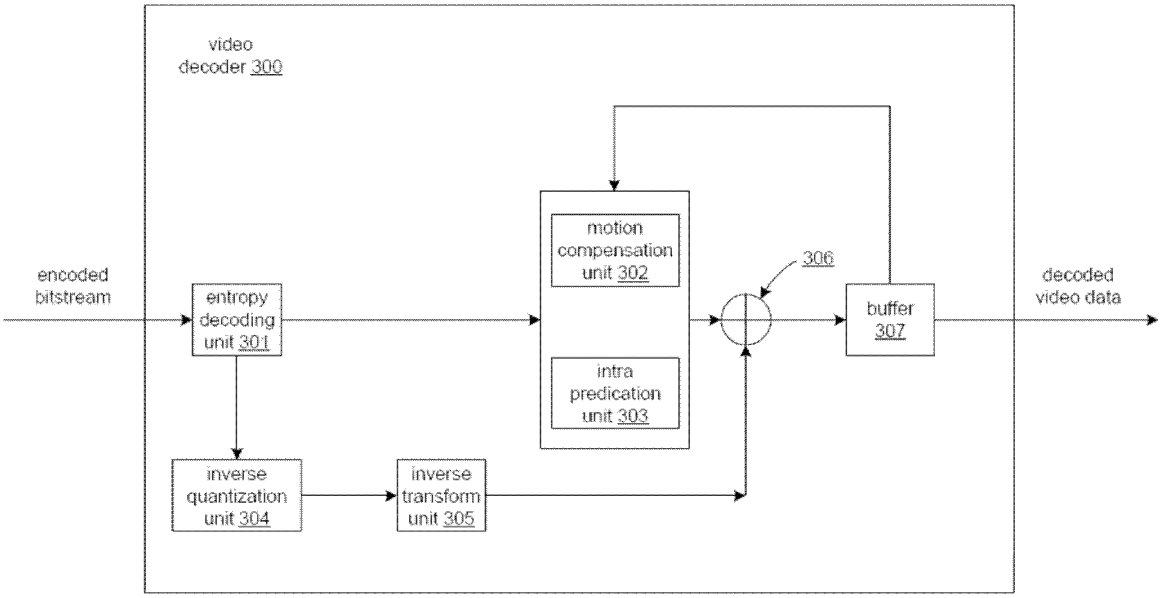
video
decoder 300
encoded
bitstream
entropy
decoding
unit 301
motion
compensation
unit 302
intra
predication
unit 303
306
buffer
307
decoded
video data
inverse
quantization
unit 304
inverse
transform
unit 305

FIG. 19

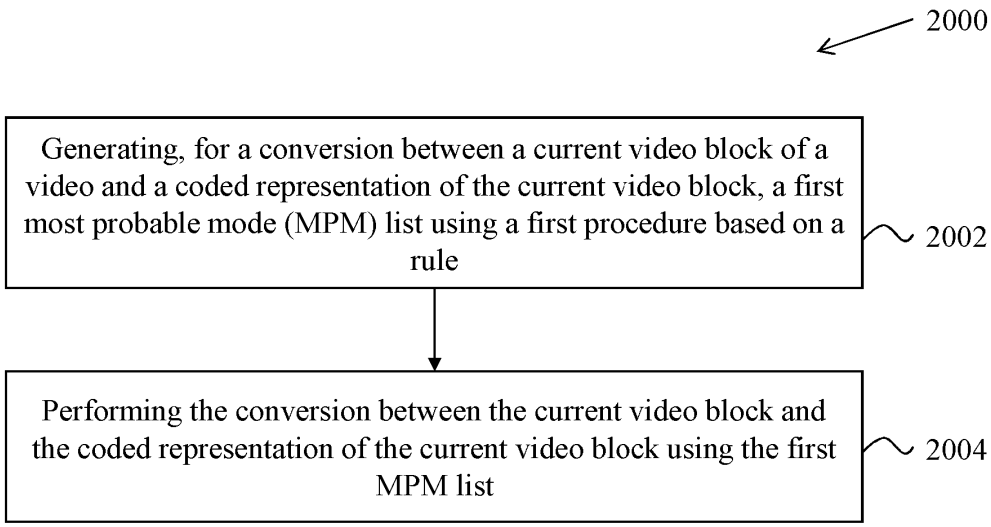
2000
Generating, for a conversion between a current video block of a video and a coded representation of the current video block, a first most probable mode (MPM) list using a first procedure based on a rule
2002
Performing the conversion between the current video block and the coded representation of the current video block using the first MPM list
2004

FIG. 20

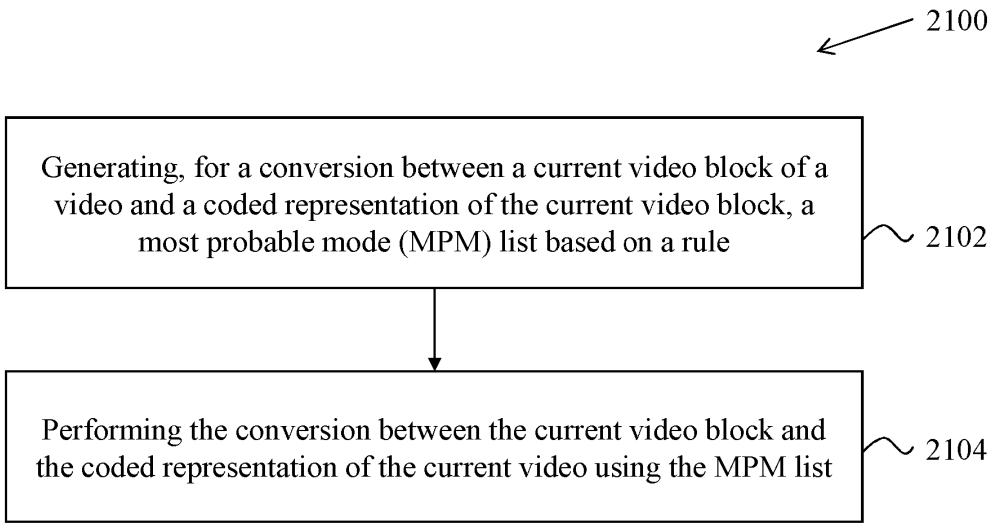
2100
Generating, for a conversion between a current video block of a video and a coded representation of the current video block, a most probable mode (MPM) list based on a rule
2102
Performing the conversion between the current video block and the coded representation of the current video using the MPM list
2104

FIG. 21

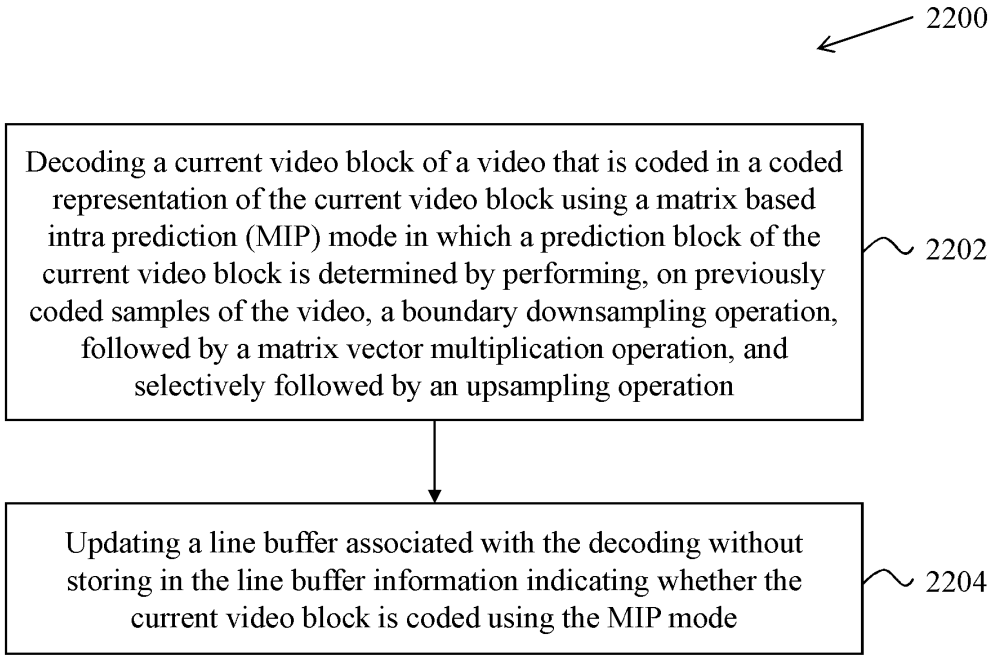
2200
Decoding a current video block of a video that is coded in a coded representation of the current video block using a matrix based intra prediction (MIP) mode in which a prediction block of the current video block is determined by performing, on previously coded samples of the video, a boundary downsampling operation, followed by a matrix vector multiplication operation, and selectively followed by an upsampling operation
2202
Updating a line buffer associated with the decoding without storing in the line buffer information indicating whether the current video block is coded using the MIP mode
2204

FIG. 22

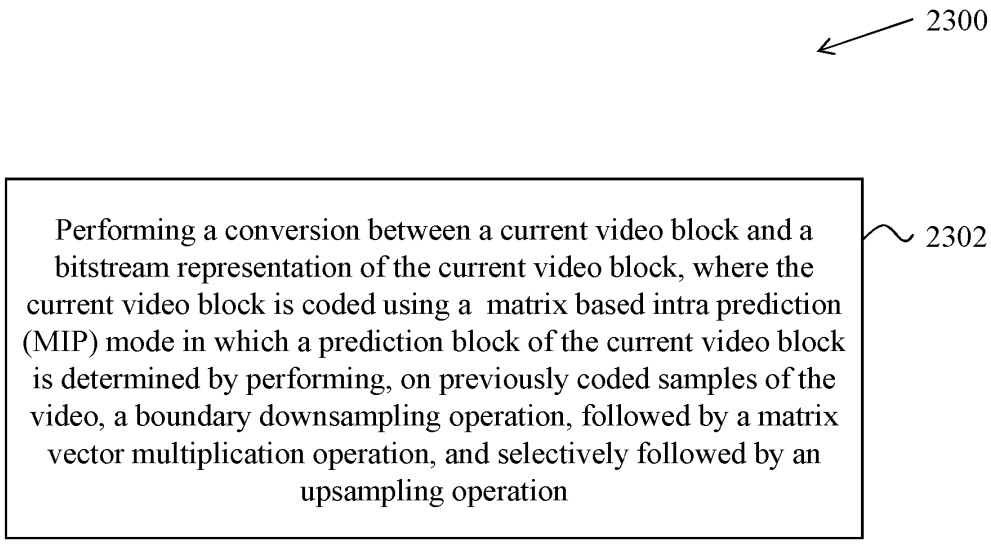
2300
Performing a conversion between a current video block and a bitstream representation of the current video block, where the current video block is coded using a matrix based intra prediction (MIP) mode in which a prediction block of the current video block is determined by performing, on previously coded samples of the video, a boundary downsampling operation, followed by a matrix vector multiplication operation, and selectively followed by an upsampling operation
2302

FIG. 23

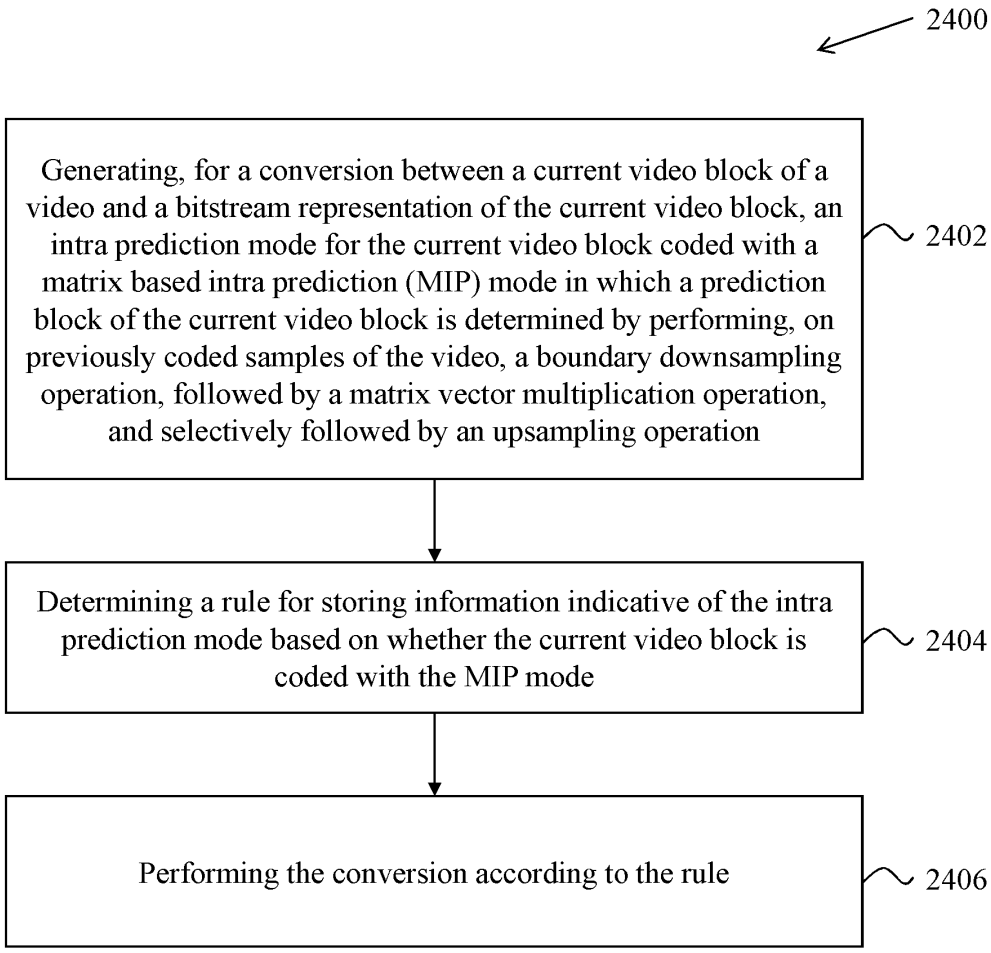
2400
Generating, for a conversion between a current video block of a video and a bitstream representation of the current video block, an intra prediction mode for the current video block coded with a matrix based intra prediction (MIP) mode in which a prediction block of the current video block is determined by performing, on previously coded samples of the video, a boundary downsampling operation, followed by a matrix vector multiplication operation, and selectively followed by an upsampling operation
2402
Determining a rule for storing information indicative of the intra prediction mode based on whether the current video block is coded with the MIP mode
2404
Performing the conversion according to the rule
2406

FIG. 24

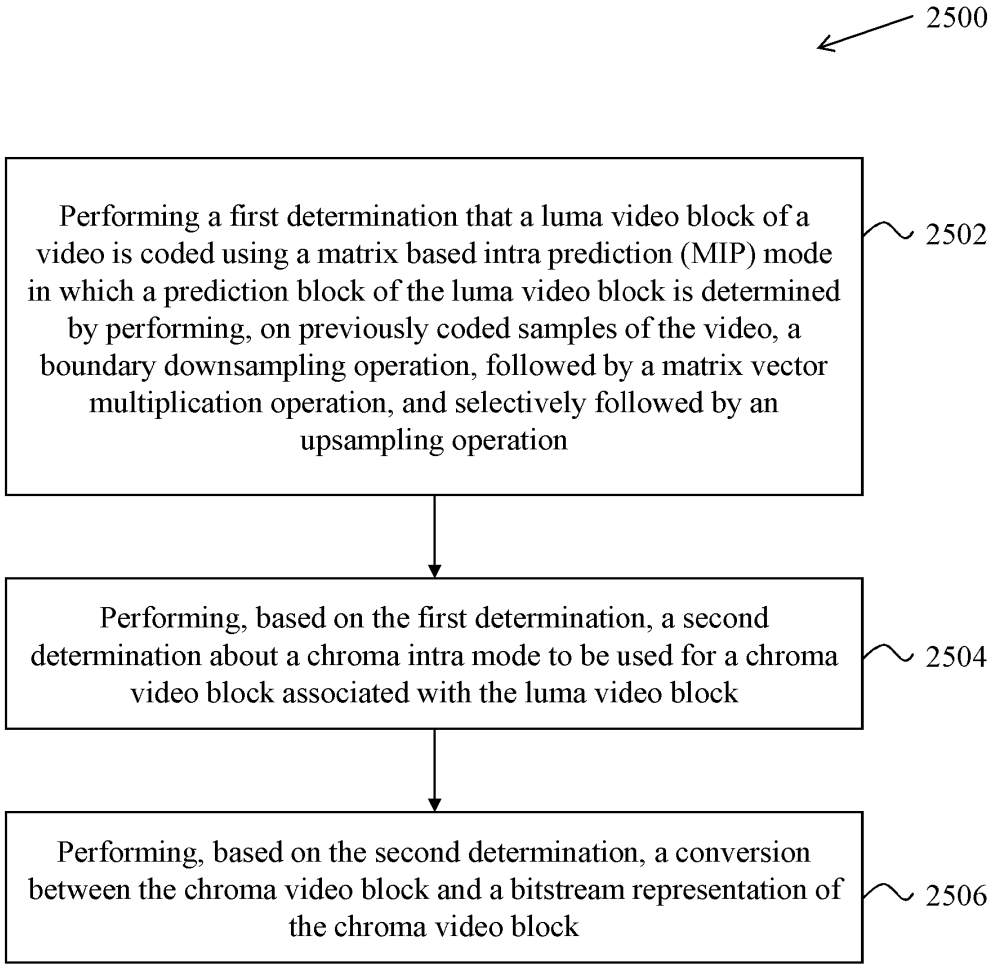
2500
Performing a first determination that a luma video block of a video is coded using a matrix based intra prediction (MIP) mode in which a prediction block of the luma video block is determined by performing, on previously coded samples of the video, a boundary downsampling operation, followed by a matrix vector multiplication operation, and selectively followed by an upsampling operation
2502
Performing, based on the first determination, a second determination about a chroma intra mode to be used for a chroma video block associated with the luma video block
2504
Performing, based on the second determination, a conversion between the chroma video block and a bitstream representation of the chroma video block
2506

FIG. 25

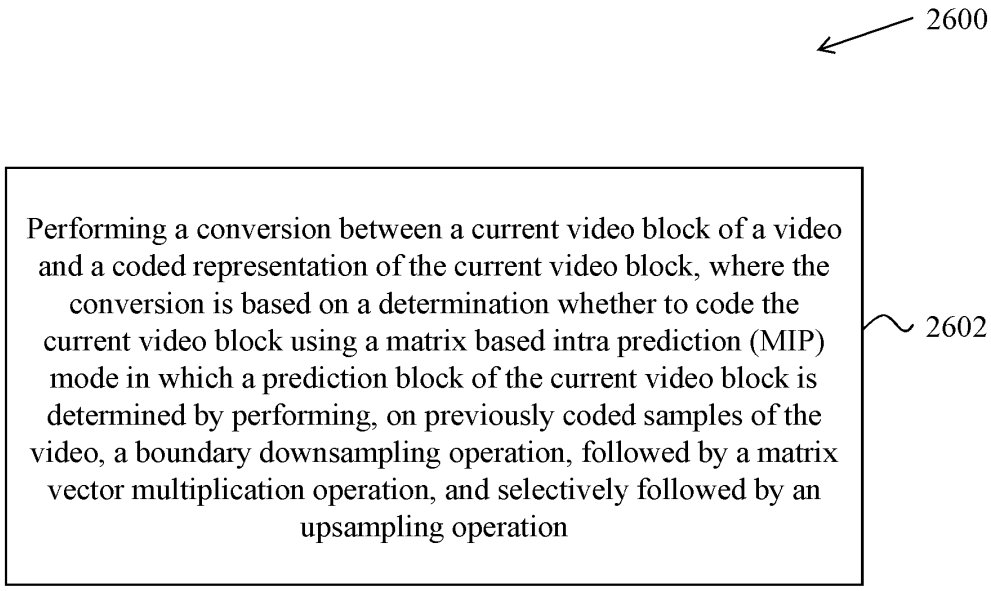
2600
Performing a conversion between a current video block of a video and a coded representation of the current video block, where the conversion is based on a determination whether to code the current video block using a matrix based intra prediction (MIP) mode in which a prediction block of the current video block is determined by performing, on previously coded samples of the video, a boundary downsampling operation, followed by a matrix vector multiplication operation, and selectively followed by an upsampling operation
2602

FIG. 26

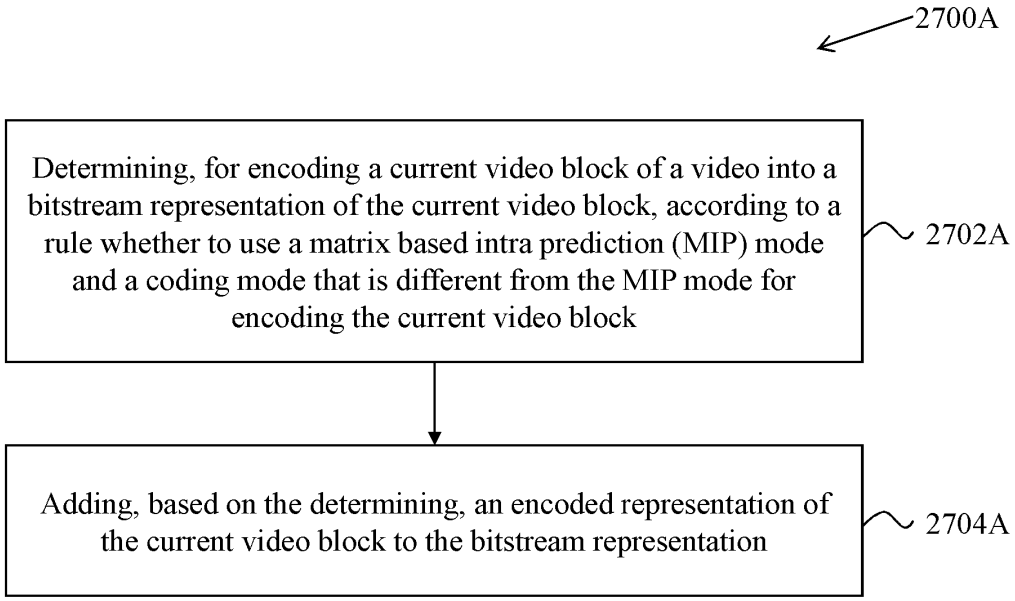
2700A
Determining, for encoding a current video block of a video into a bitstream representation of the current video block, according to a rule whether to use a matrix based intra prediction (MIP) mode and a coding mode that is different from the MIP mode for encoding the current video block
2702A
Adding, based on the determining, an encoded representation of the current video block to the bitstream representation
2704A

FIG. 27A

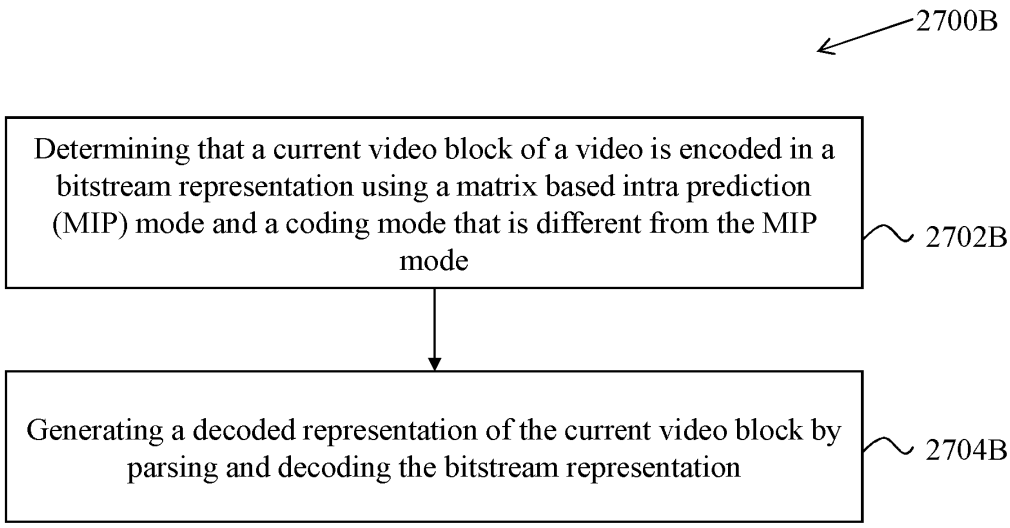
2700B
Determining that a current video block of a video is encoded in a bitstream representation using a matrix based intra prediction (MIP) mode and a coding mode that is different from the MIP mode
2702B
Generating a decoded representation of the current video block by parsing and decoding the bitstream representation
2704B

FIG. 27B

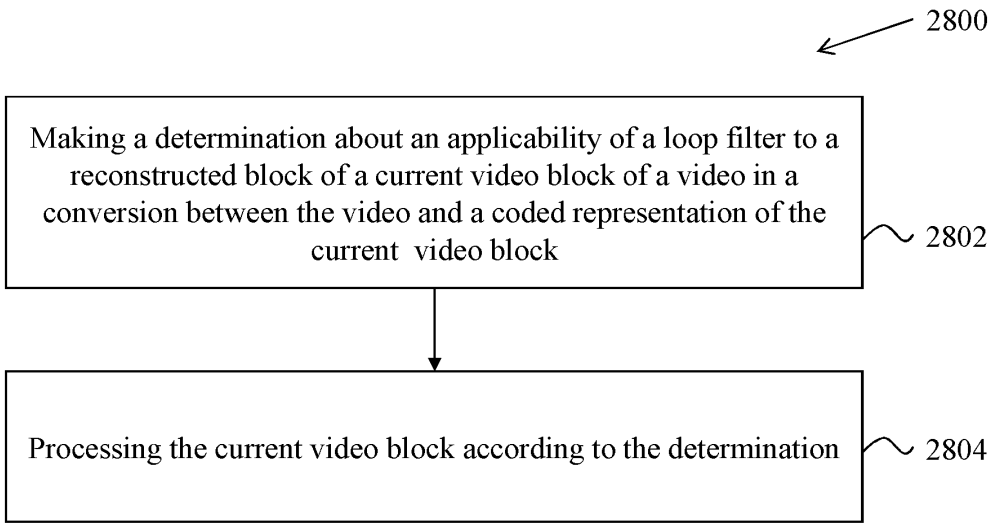
2800
Making a determination about an applicability of a loop filter to a reconstructed block of a current video block of a video in a conversion between the video and a coded representation of the current video block
2802
Processing the current video block according to the determination
2804

FIG. 28

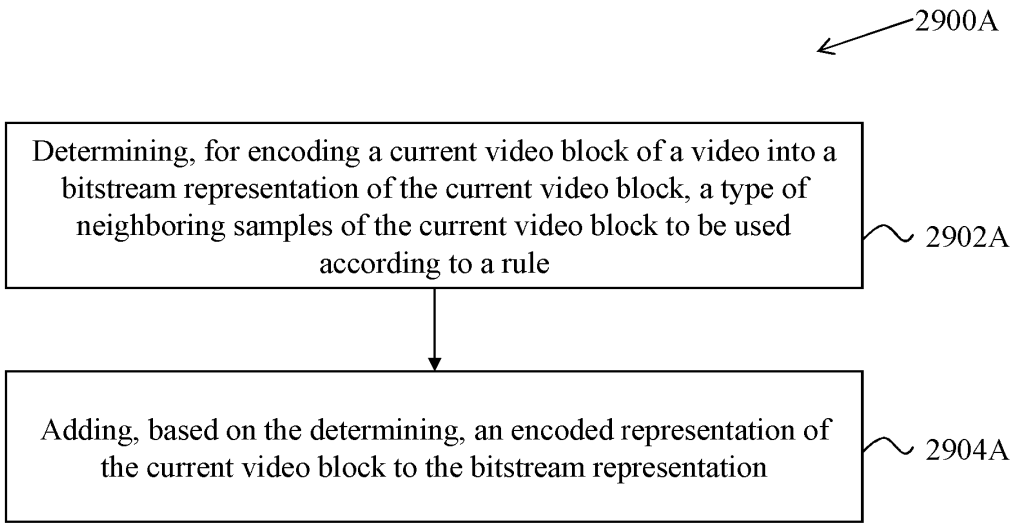
2900A
Determining, for encoding a current video block of a video into a bitstream representation of the current video block, a type of neighboring samples of the current video block to be used according to a rule
2902A
Adding, based on the determining, an encoded representation of the current video block to the bitstream representation
2904A

FIG. 29A

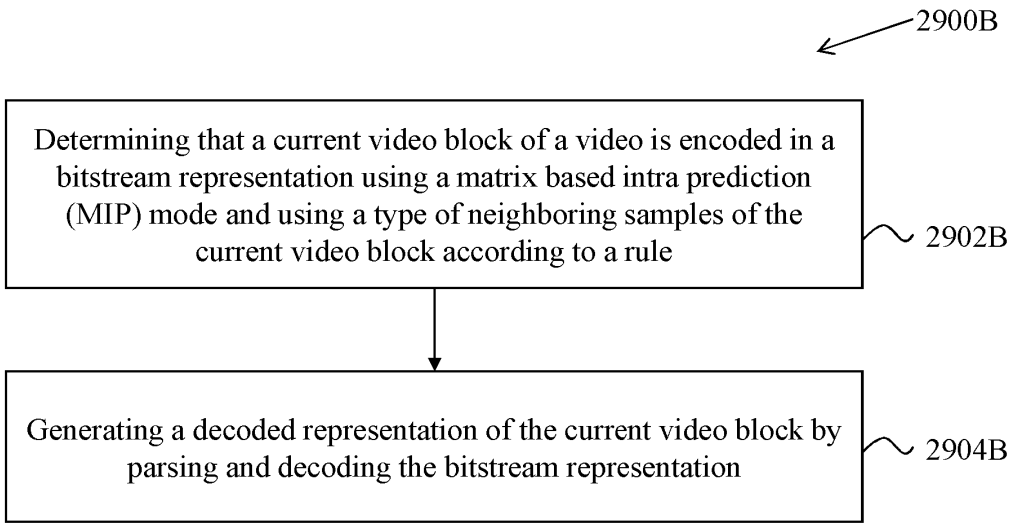
2900B
Determining that a current video block of a video is encoded in a bitstream representation using a matrix based intra prediction (MIP) mode and using a type of neighboring samples of the current video block according to a rule
2902B
Generating a decoded representation of the current video block by parsing and decoding the bitstream representation
2904B

FIG. 29B

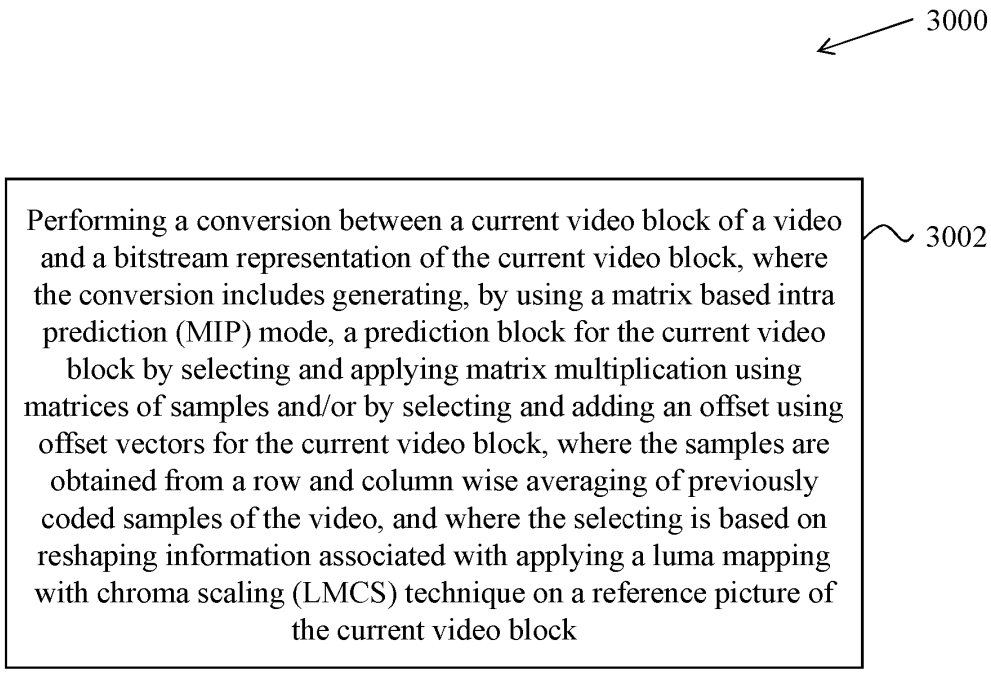
3000
Performing a conversion between a current video block of a video and a bitstream representation of the current video block, where the conversion includes generating, by using a matrix based intra prediction (MIP) mode, a prediction block for the current video block by selecting and applying matrix multiplication using matrices of samples and/or by selecting and adding an offset using offset vectors for the current video block, where the samples are obtained from a row and column wise averaging of previously coded samples of the video, and where the selecting is based on reshaping information associated with applying a luma mapping with chroma scaling (LMCS) technique on a reference picture of the current video block
3002

FIG. 30

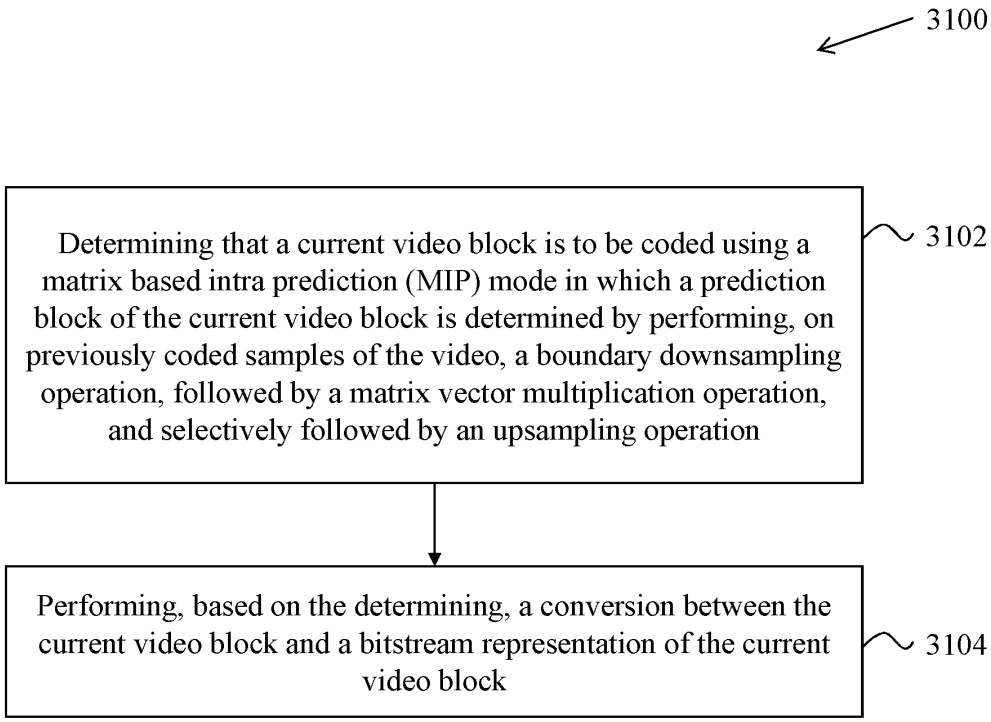
3100
Determining that a current video block is to be coded using a matrix based intra prediction (MIP) mode in which a prediction block of the current video block is determined by performing, on previously coded samples of the video, a boundary downsampling operation, followed by a matrix vector multiplication operation, and selectively followed by an upsampling operation
3102
Performing, based on the determining, a conversion between the current video block and a bitstream representation of the current video block
3104

FIG. 31

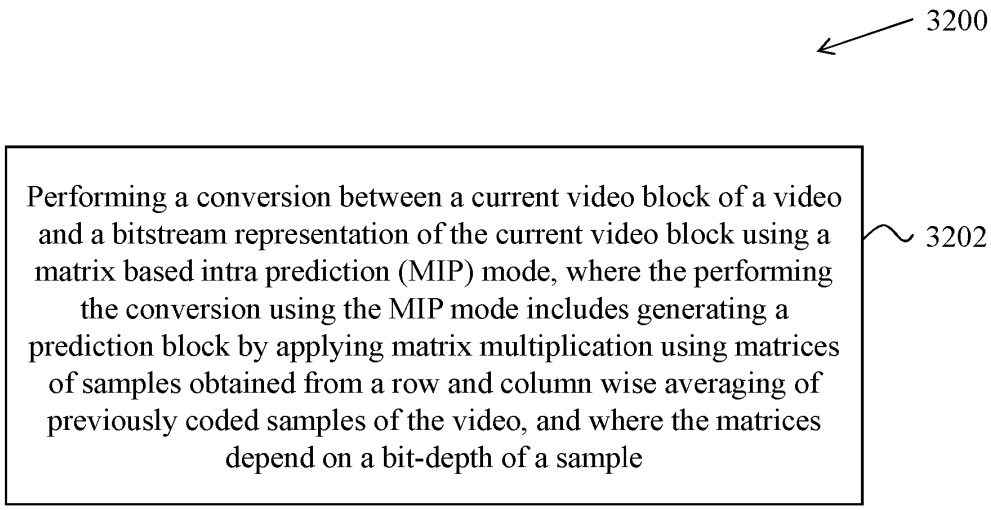
3200
Performing a conversion between a current video block of a video and a bitstream representation of the current video block using a matrix based intra prediction (MIP) mode, where the performing the conversion using the MIP mode includes generating a prediction block by applying matrix multiplication using matrices of samples obtained from a row and column wise averaging of previously coded samples of the video, and where the matrices depend on a bit-depth of a sample
3202

FIG. 32

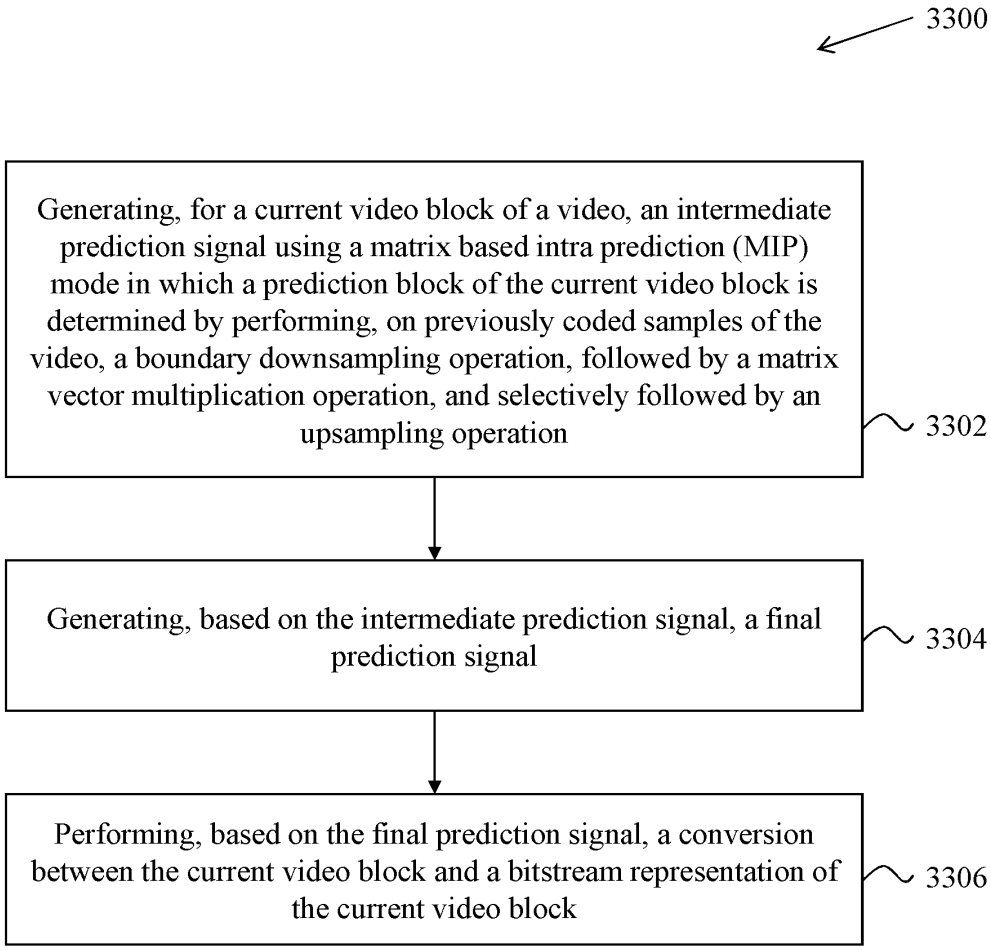
3300
Generating, for a current video block of a video, an intermediate prediction signal using a matrix based intra prediction (MIP) mode in which a prediction block of the current video block is determined by performing, on previously coded samples of the video, a boundary downsampling operation, followed by a matrix vector multiplication operation, and selectively followed by an upsampling operation
3302
Generating, based on the intermediate prediction signal, a final prediction signal
3304
Performing, based on the final prediction signal, a conversion between the current video block and a bitstream representation of the current video block
3306

FIG. 33

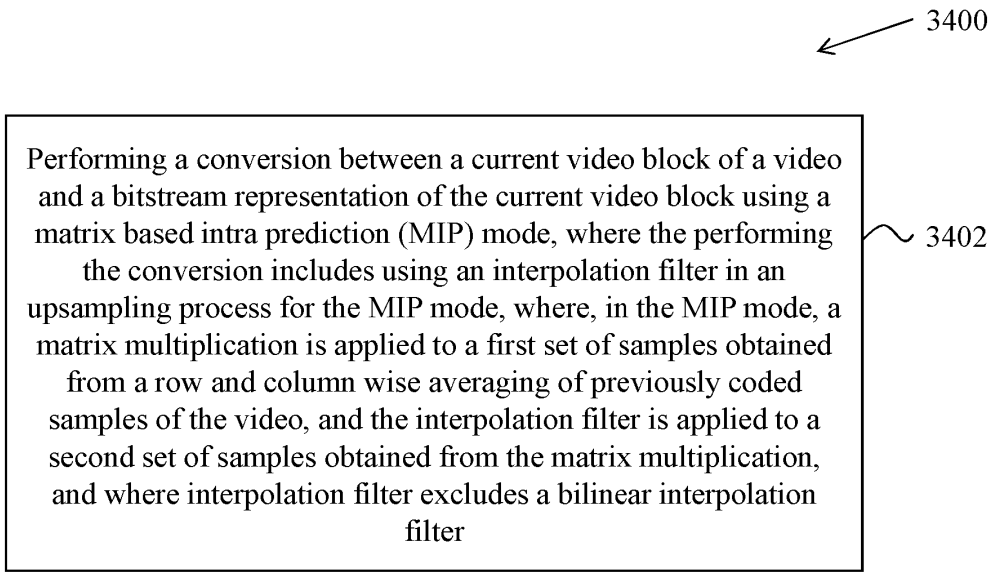
3400
Performing a conversion between a current video block of a video and a bitstream representation of the current video block using a matrix based intra prediction (MIP) mode, where the performing the conversion includes using an interpolation filter in an upsampling process for the MIP mode, where, in the MIP mode, a matrix multiplication is applied to a first set of samples obtained from a row and column wise averaging of previously coded samples of the video, and the interpolation filter is applied to a second set of samples obtained from the matrix multiplication, and where interpolation filter excludes a bilinear interpolation filter
3402

FIG. 34

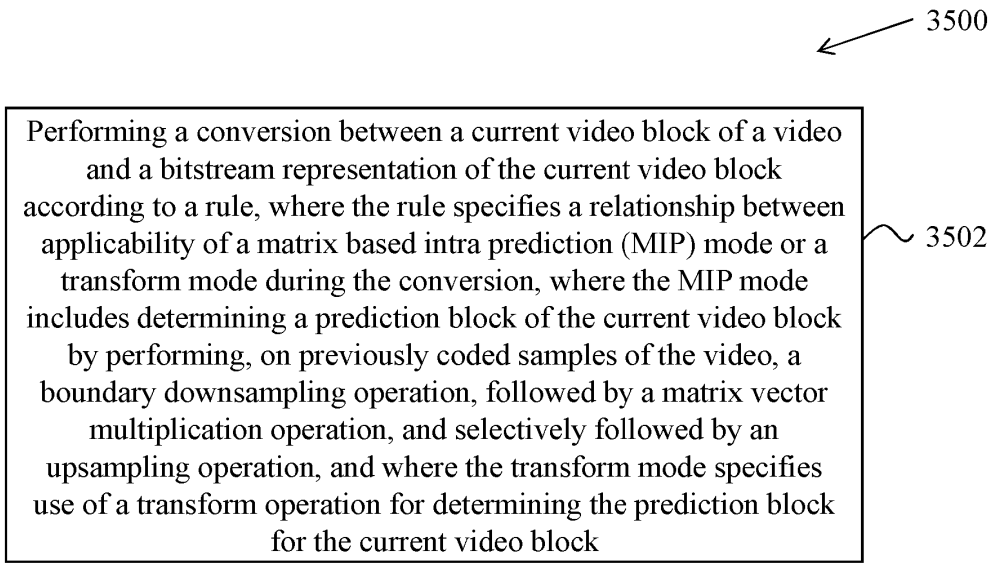
3500
Performing a conversion between a current video block of a video and a bitstream representation of the current video block according to a rule, where the rule specifies a relationship between applicability of a matrix based intra prediction (MIP) mode or a transform mode during the conversion, where the MIP mode includes determining a prediction block of the current video block by performing, on previously coded samples of the video, a boundary downsampling operation, followed by a matrix vector multiplication operation, and selectively followed by an upsampling operation, and where the transform mode specifies use of a transform operation for determining the prediction block for the current video block
3502

FIG. 35

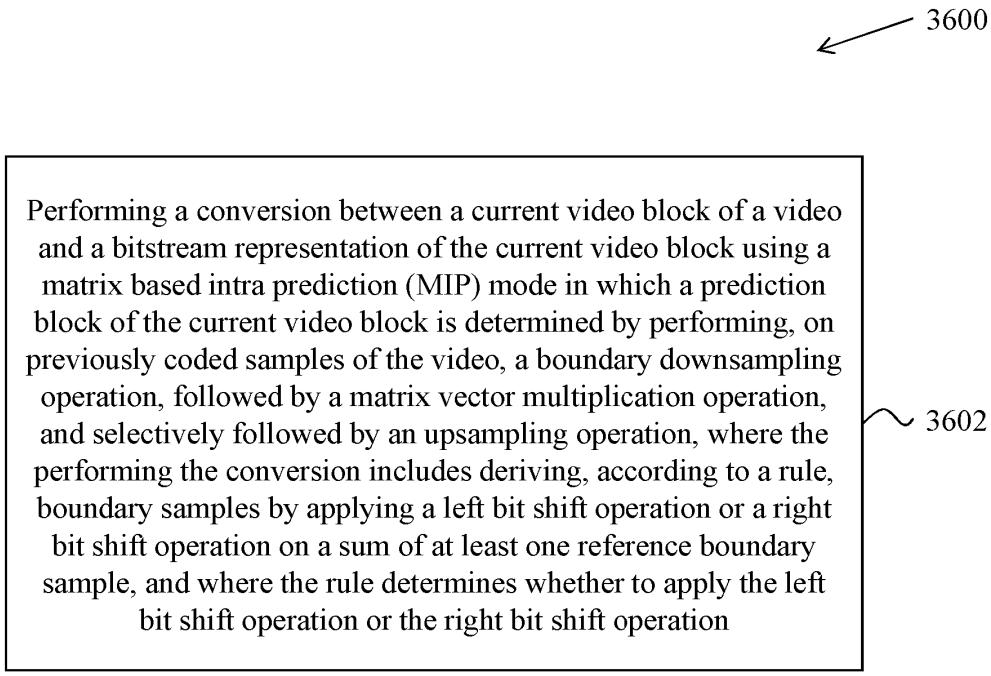
3600
Performing a conversion between a current video block of a video and a bitstream representation of the current video block using a matrix based intra prediction (MIP) mode in which a prediction block of the current video block is determined by performing, on previously coded samples of the video, a boundary downsampling operation, followed by a matrix vector multiplication operation, and selectively followed by an upsampling operation, where the performing the conversion includes deriving, according to a rule, boundary samples by applying a left bit shift operation or a right bit shift operation on a sum of at least one reference boundary sample, and where the rule determines whether to apply the left bit shift operation or the right bit shift operation
3602

FIG. 36

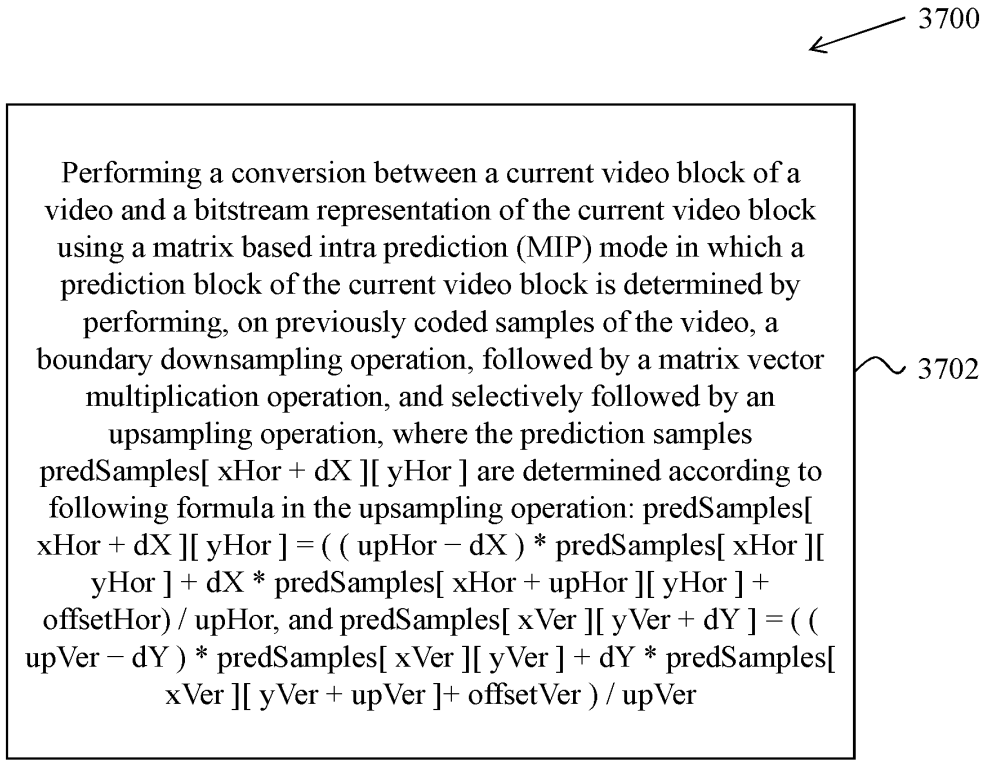
3700
Performing a conversion between a current video block of a video and a bitstream representation of the current video block using a matrix based intra prediction (MIP) mode in which a prediction block of the current video block is determined by performing, on previously coded samples of the video, a boundary downsampling operation, followed by a matrix vector multiplication operation, and selectively followed by an upsampling operation, where the prediction samples predSamples[xHor + dX][yHor] are determined according to following formula in the upsampling operation: predSamples[xHor + dX][yHor] = ((upHor − dX) * predSamples[xHor][yHor] + dX * predSamples[xHor + upHor][yHor] + offsetHor) / upHor, and predSamples[xVer][yVer + dY] = ((upVer − dY) * predSamples[xVer][yVer] + dY * predSamples[xVer][yVer + upVer]+ offsetVer) / upVer
3702

FIG. 37

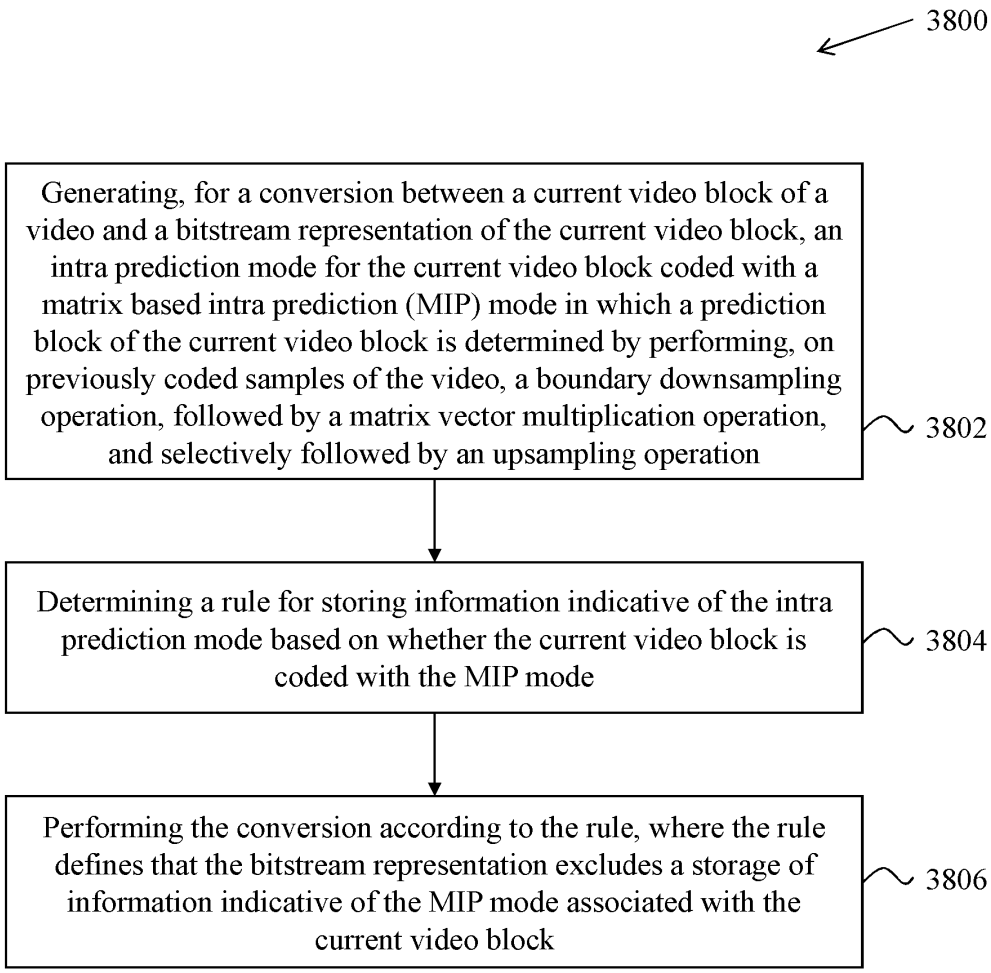
3800
Generating, for a conversion between a current video block of a video and a bitstream representation of the current video block, an intra prediction mode for the current video block coded with a matrix based intra prediction (MIP) mode in which a prediction block of the current video block is determined by performing, on previously coded samples of the video, a boundary downsampling operation, followed by a matrix vector multiplication operation, and selectively followed by an upsampling operation
3802
Determining a rule for storing information indicative of the intra prediction mode based on whether the current video block is coded with the MIP mode
3804
Performing the conversion according to the rule, where the rule defines that the bitstream representation excludes a storage of information indicative of the MIP mode associated with the current video block
3806

FIG. 38