FIG. 1

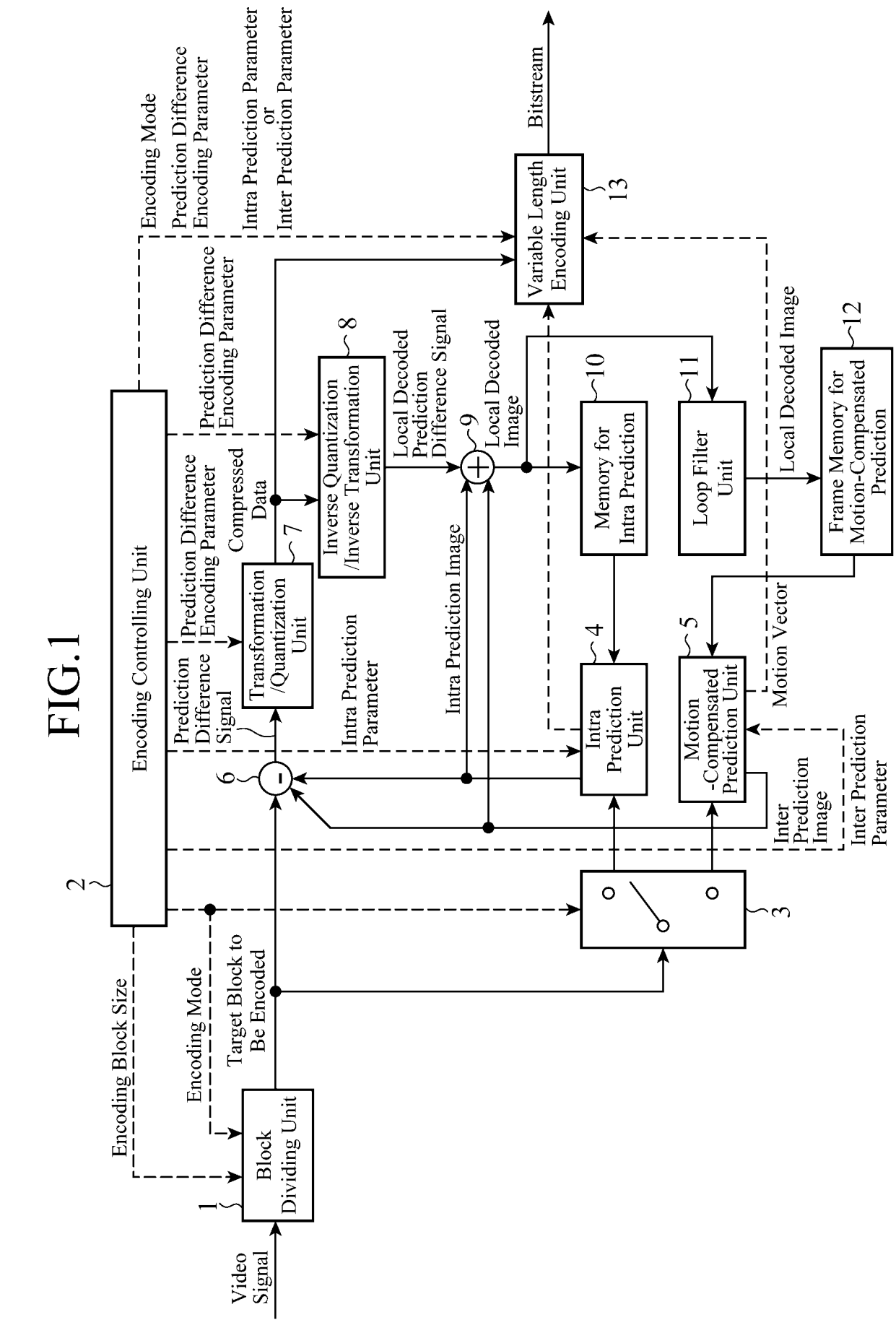

Video Signal
1
Block Dividing Unit
Encoding Block Size
Encoding Mode
Target Block to Be Encoded
2
Encoding Controlling Unit
3
4
Intra Prediction Unit
5
Motion -Compensated Prediction Unit
6
7
Transformation /Quantization Unit
8
Inverse Quantization /Inverse Transformation Unit
9
10
Memory for Intra Prediction
11
Loop Filter Unit
12
Frame Memory for Motion-Compensated Prediction
13
Variable Length Encoding Unit
Bitstream
Encoding Mode
Prediction Difference Encoding Parameter
Intra Prediction Parameter or Inter Prediction Parameter
Prediction Difference Encoding Parameter
Prediction Difference Encoding Parameter
Compressed Data
Local Decoded Prediction Difference Signal
Local Decoded Image
Local Decoded Image
Prediction Difference Signal
Intra Prediction Parameter
Intra Prediction Image
Motion Vector
Inter Prediction Image
Inter Prediction Parameter

FIG.2

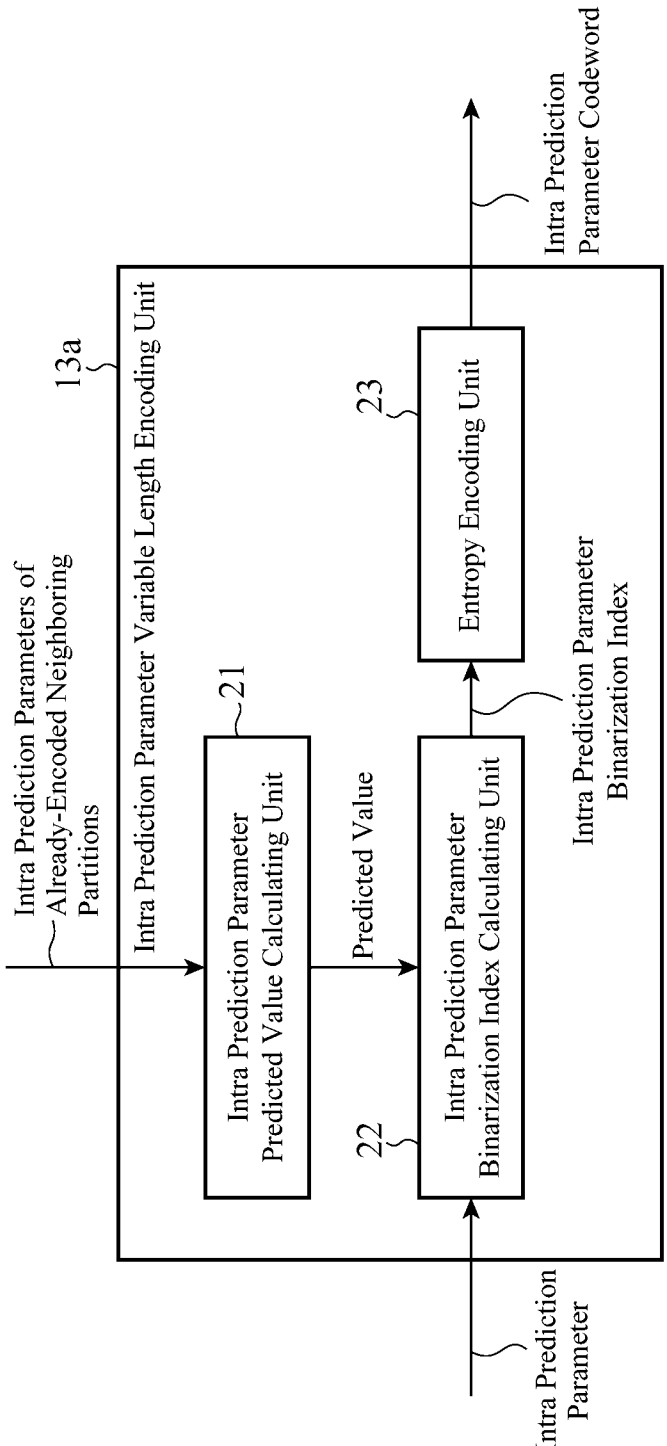

Intra Prediction Parameters of Already-Encoded Neighboring Partitions
Intra Prediction Parameter Variable Length Encoding Unit
13a
Intra Prediction Parameter Predicted Value Calculating Unit
21
Predicted Value
Intra Prediction Parameter Binarization Index Calculating Unit
22
Intra Prediction Parameter Binarization Index
Entropy Encoding Unit
23
Intra Prediction Parameter Codeword
Intra Prediction Parameter

FIG.3

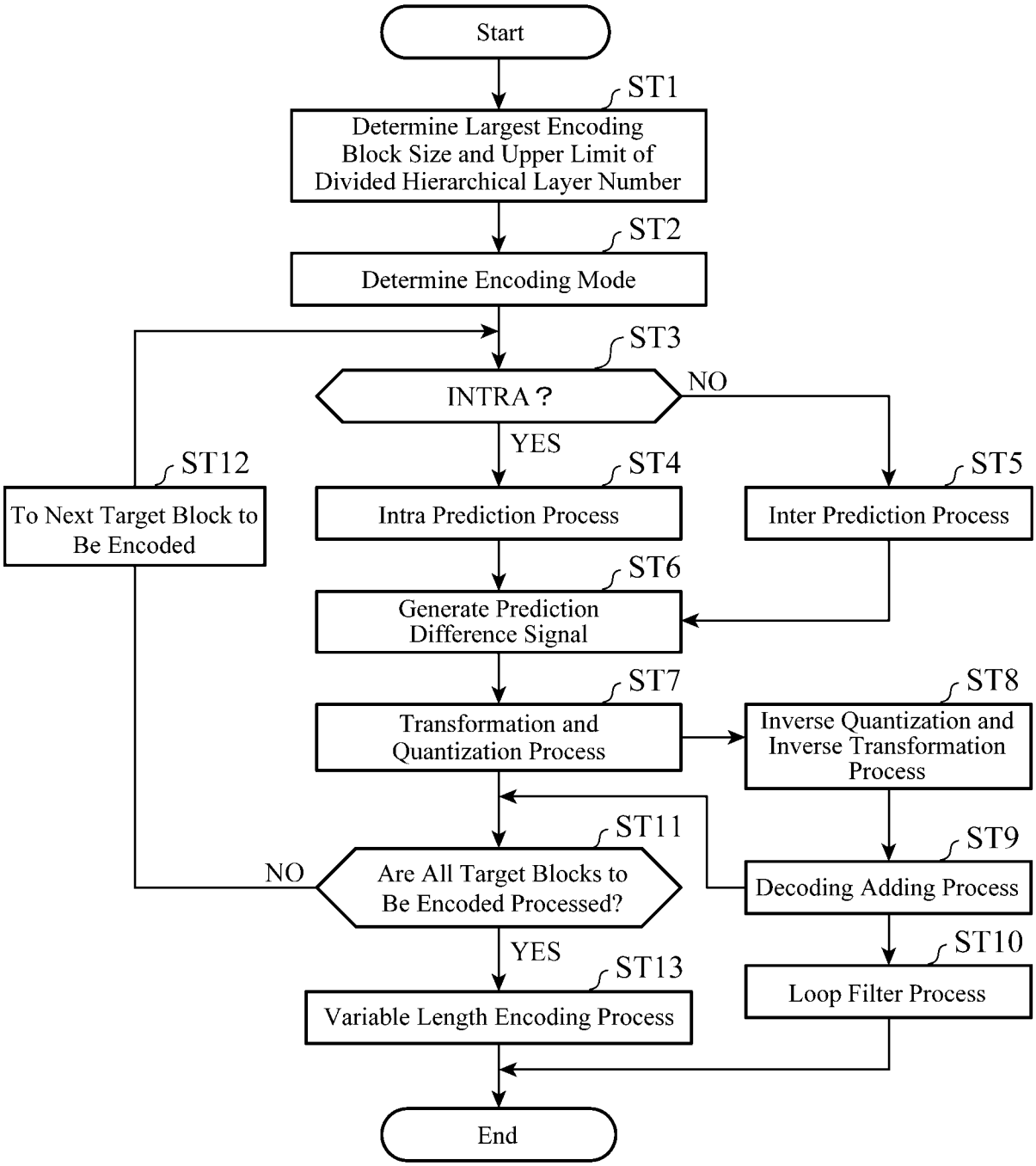

Start
ST1
Determine Largest Encoding Block Size and Upper Limit of Divided Hierarchical Layer Number
ST2
Determine Encoding Mode
ST3
INTRA ?
NO
YES
ST4
Intra Prediction Process
ST5
Inter Prediction Process
ST6
Generate Prediction Difference Signal
ST7
Transformation and Quantization Process
ST8
Inverse Quantization and Inverse Transformation Process
ST9
Decoding Adding Process
ST10
Loop Filter Process
ST11
Are All Target Blocks to Be Encoded Processed?
NO
YES
ST12
To Next Target Block to Be Encoded
ST13
Variable Length Encoding Process
End

FIG.4

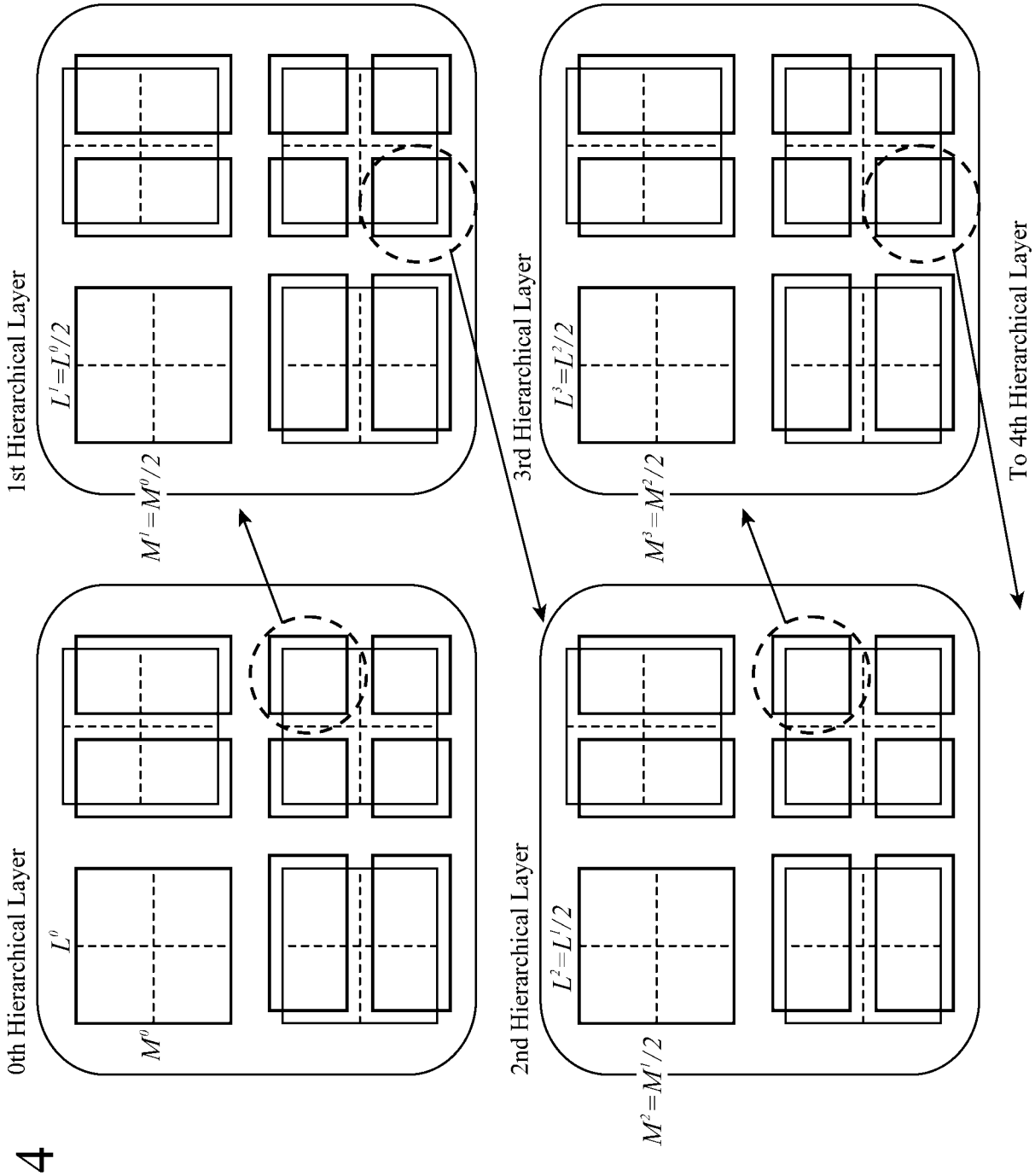

0th Hierarchical Layer
1st Hierarchical Layer
2nd Hierarchical Layer
3rd Hierarchical Layer
To 4th Hierarchical Layer
L^0
M^0
$L^1=L^0/2$
$M^1=M^0/2$
$L^2=L^1/2$
$M^2=M^1/2$
$L^3=L^2/2$
$M^3=M^2/2$

FIG.5

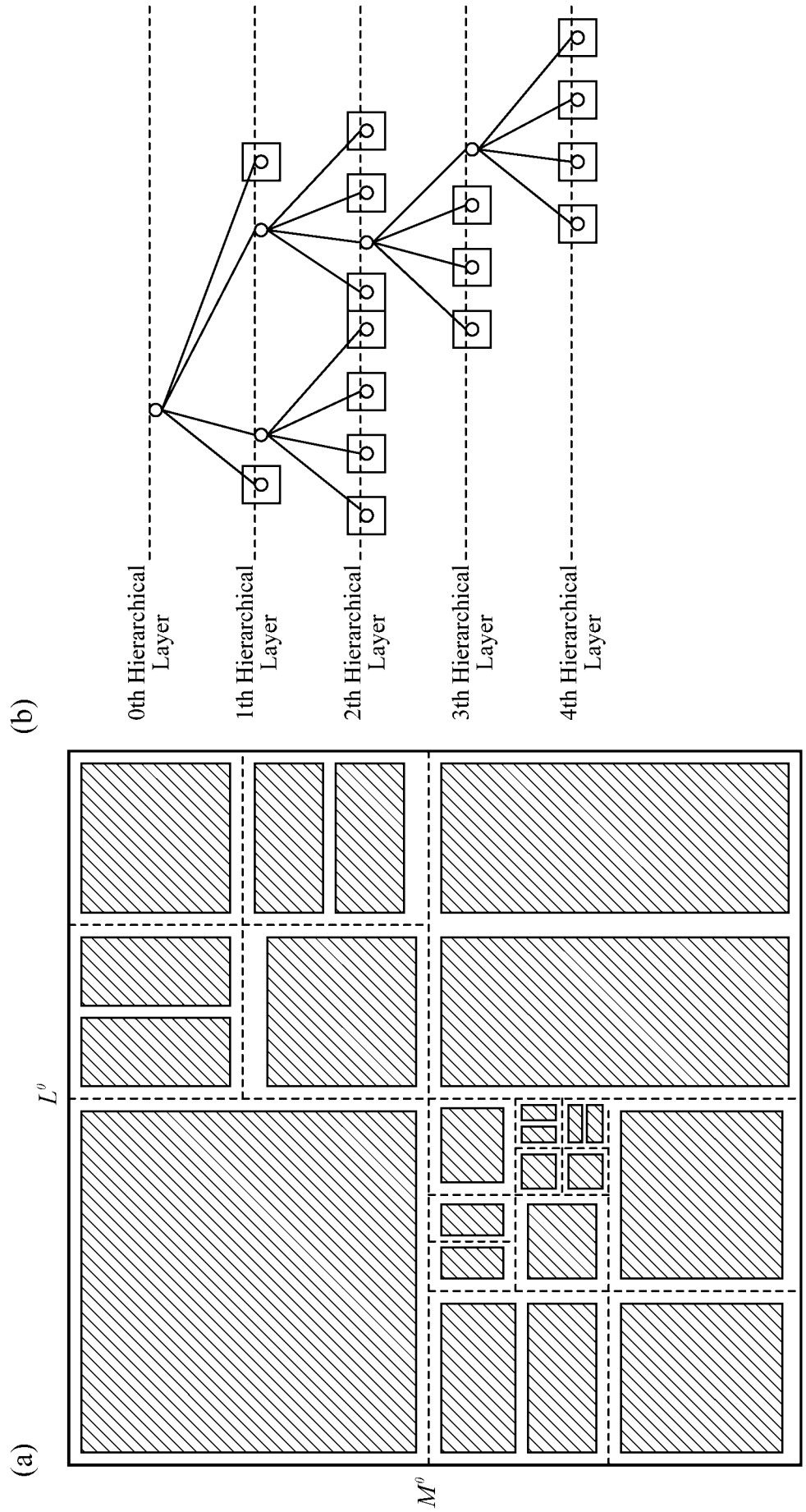
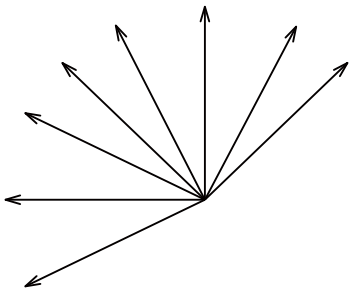

(a)
(b)
L^0
M^0
0th Hierarchical Layer
1th Hierarchical Layer
2th Hierarchical Layer
3th Hierarchical Layer
4th Hierarchical Layer

FIG.6

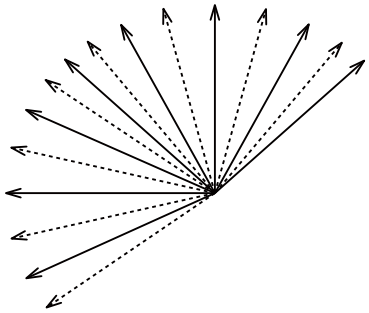
Intra Prediction Mode Index	Intra Prediction Mode
0	Vertical Prediction
1	Horizontal Prediction
2	Average Prediction
3～N-1	Diagonal Prediction

N: Number of Intra Prediction Modes

Directional Predictions in Case of N=9 (8 Modes)



Directional Predictions in Case of N=17 (16 Modes)



Directional Prediction in Case of N=33 (32 Modes)

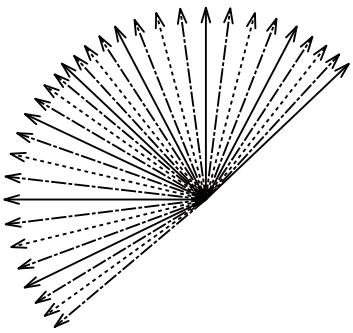


FIG.7

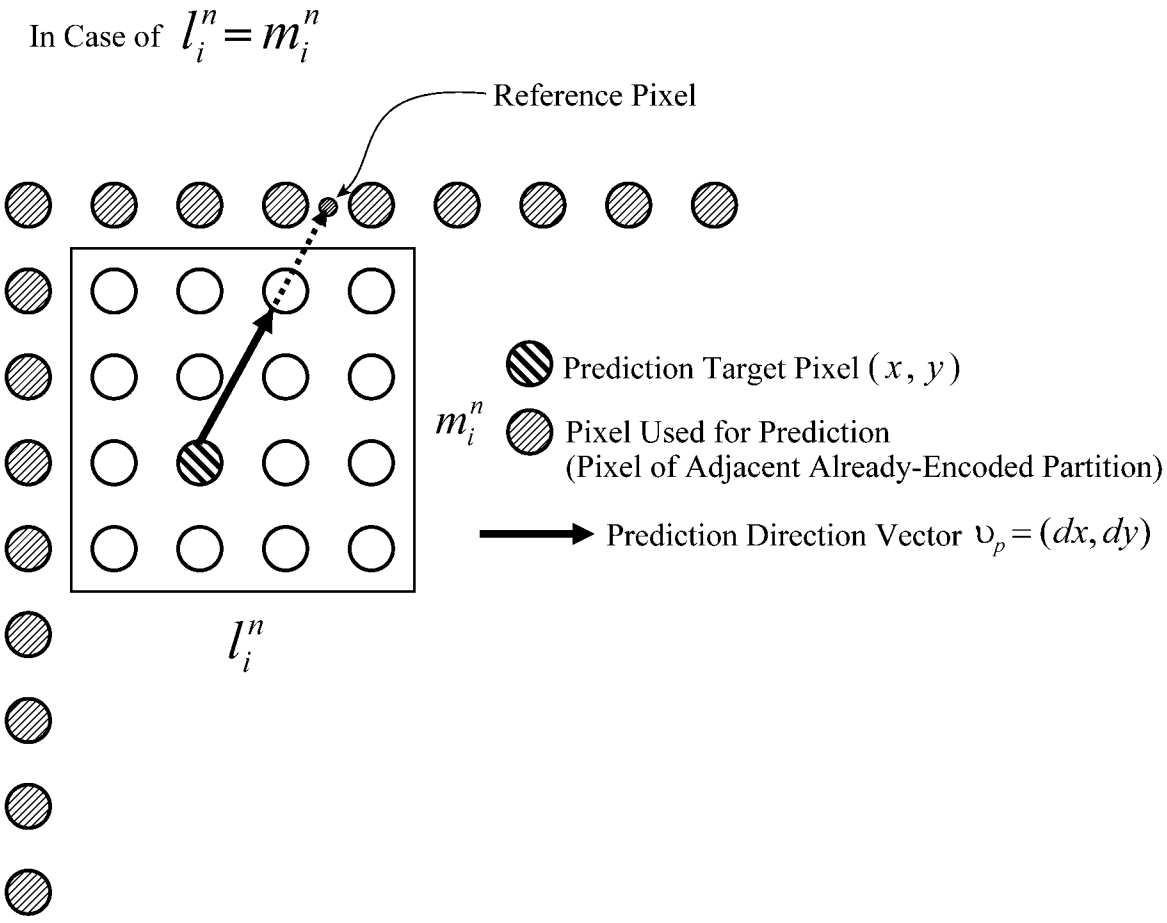

In Case of $l_i^n = m_i^n$
Reference Pixel
m_i^n
l_i^n
Prediction Target Pixel (x, y)
Pixel Used for Prediction
(Pixel of Adjacent Already-Encoded Partition)
Prediction Direction Vector $\upsilon_p = (dx, dy)$

FIG.8

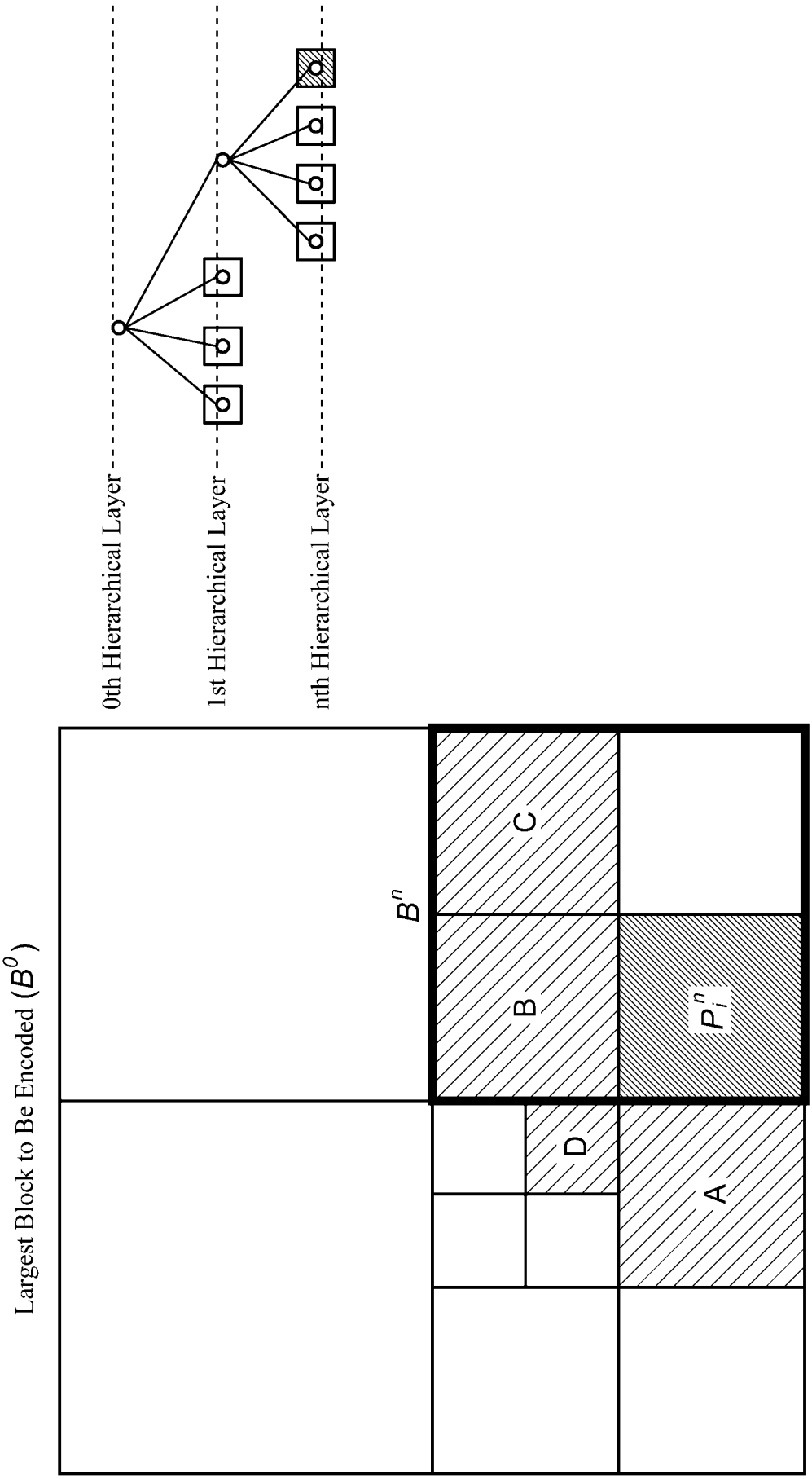

0th Hierarchical Layer
1st Hierarchical Layer
nth Hierarchical Layer
Largest Block to Be Encoded (B^0)
B^n
C
B
P_i^n
D
A

FIG.9

In Case of N=17

Intra Prediction Mode Index	Intra Prediction Mode	Prediction Direction Representative Index	Prediction Direction Differential Index	Intra Prediction Mode Index	Intra Prediction Mode	Prediction Direction Representative Index	Prediction Direction Differential Index
0	Vertical Prediction	0	0	9	Diagonal Prediction7	0	1
1	Horizontal Prediction	1	0	10	Diagonal Prediction8	1	1
2	Average Prediction	2	0	11	Diagonal Prediction 9	3	1
3	Diagonal Prediction 1	3	0	12	Diagonal Prediction 10	4	1
4	Diagonal Prediction 2	4	0	13	Diagonal Prediction 11	5	1
5	Diagonal Prediction 3	5	0	14	Diagonal Prediction 12	6	1
6	Diagonal Prediction 4	6	0	15	Diagonal Prediction 13	7	1
7	Diagonal Prediction 5	7	0	16	Diagonal Prediction 14	8	1
8	Diagonal Prediction 6	8	0				

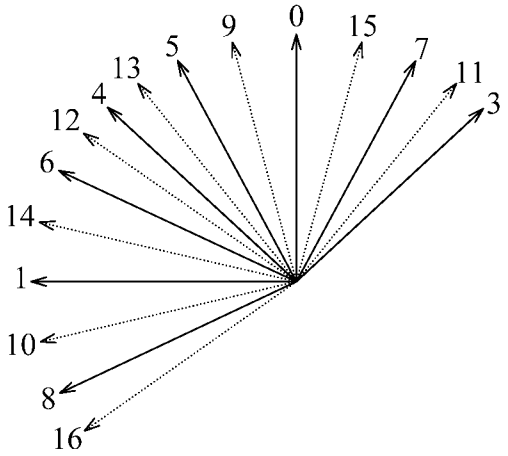


FIG.10

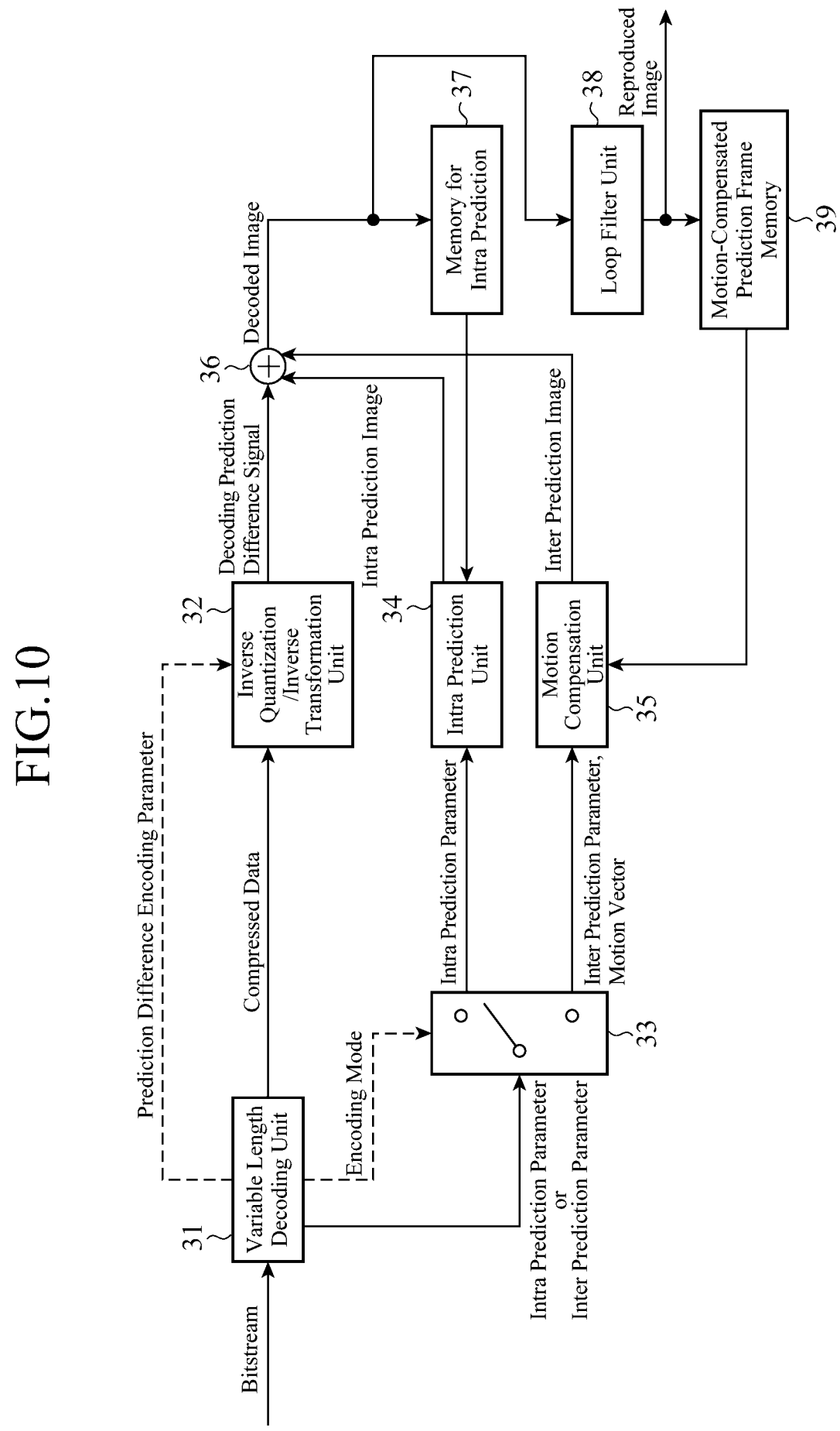

Bitstream
31
Variable Length Decoding Unit
Prediction Difference Encoding Parameter
Encoding Mode
Compressed Data
32
Inverse Quantization /Inverse Transformation Unit
Decoding Prediction Difference Signal
36
Decoded Image
Intra Prediction Image
34
Intra Prediction Unit
Intra Prediction Parameter
Intra Prediction Parameter or Inter Prediction Parameter
33
Inter Prediction Parameter, Motion Vector
Inter Prediction Image
Motion Compensation Unit
35
Memory for Intra Prediction
37
Loop Filter Unit
38
Reproduced Image
Motion-Compensated Prediction Frame Memory
39

FIG.11

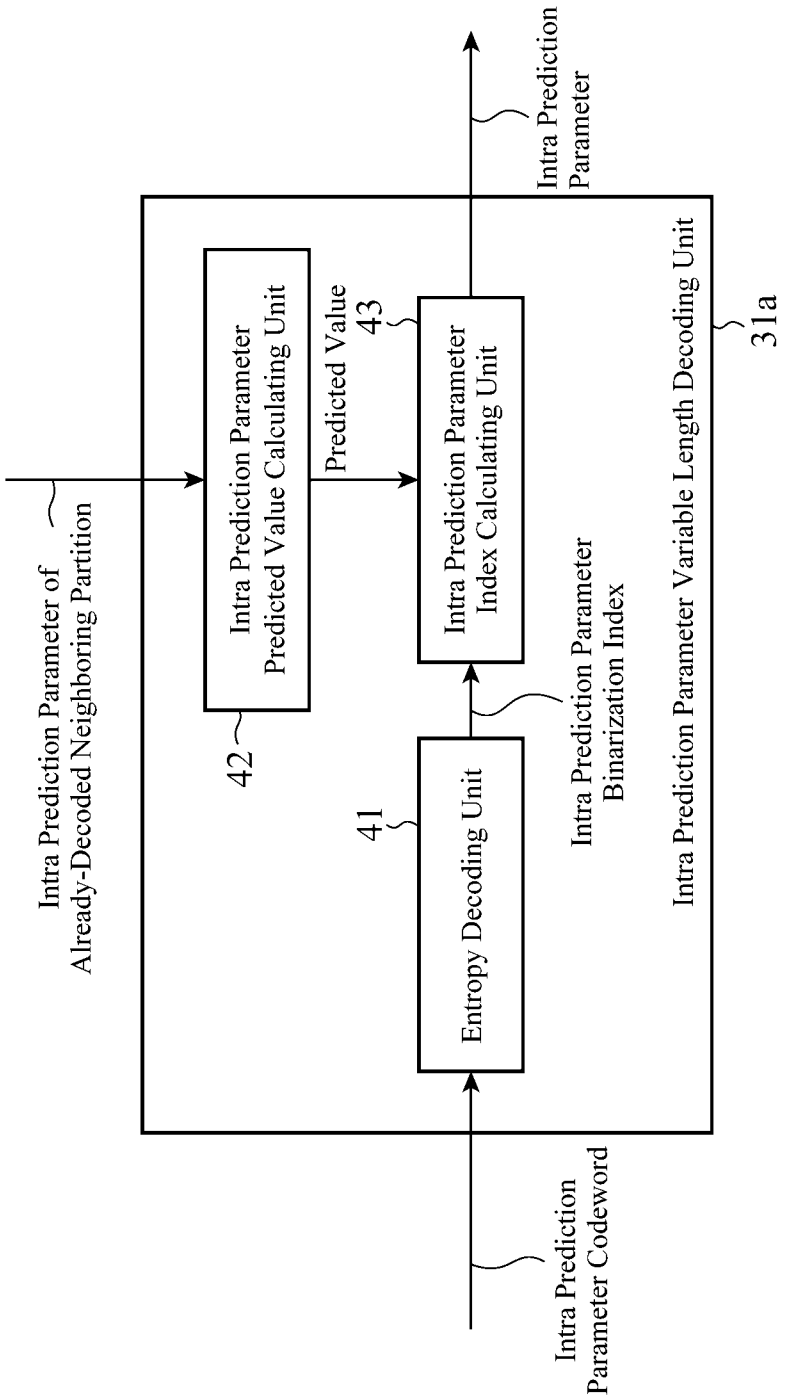

Intra Prediction Parameter of
Already-Decoded Neighboring Partition
Intra Prediction Parameter
Predicted Value Calculating Unit
42
Predicted Value
43
Intra Prediction Parameter
Index Calculating Unit
41
Entropy Decoding Unit
Intra Prediction Parameter
Binarization Index
Intra Prediction Parameter Variable Length Decoding Unit
31a
Intra Prediction
Parameter Codeword
Intra Prediction
Parameter

FIG.12

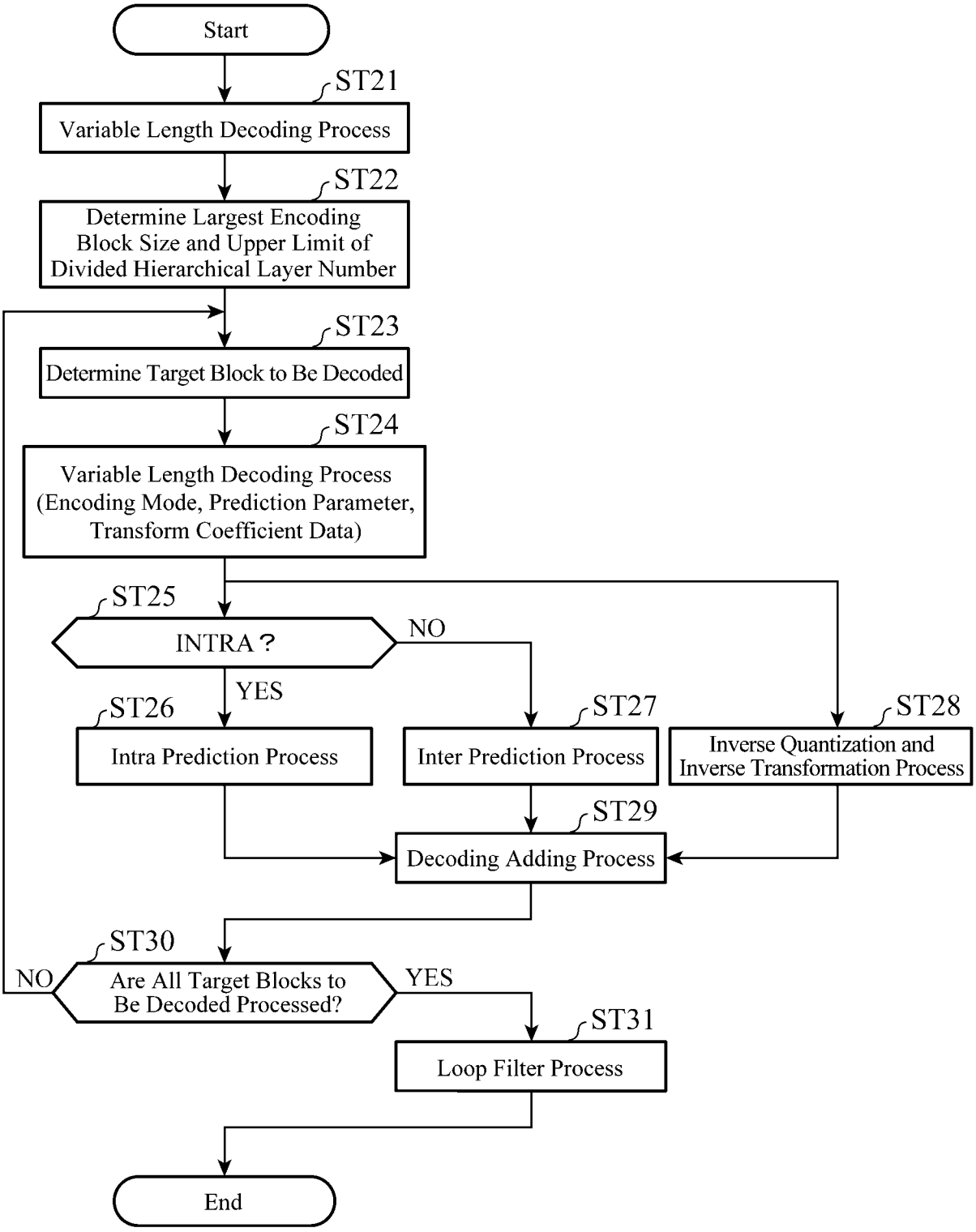
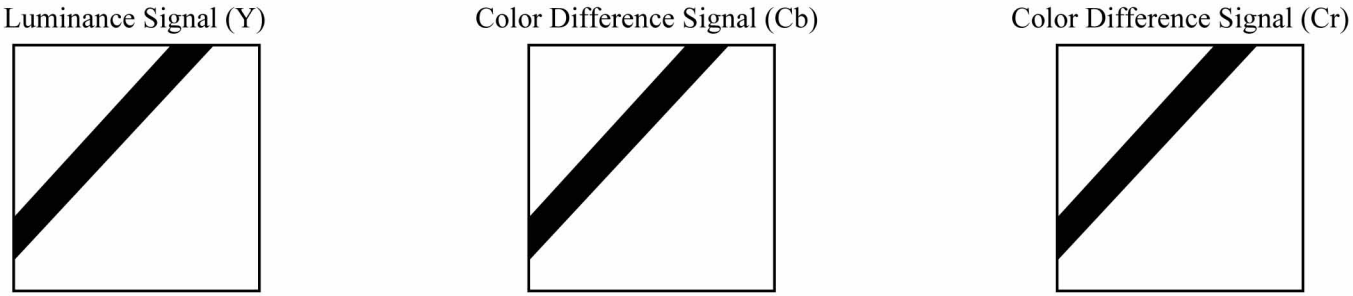
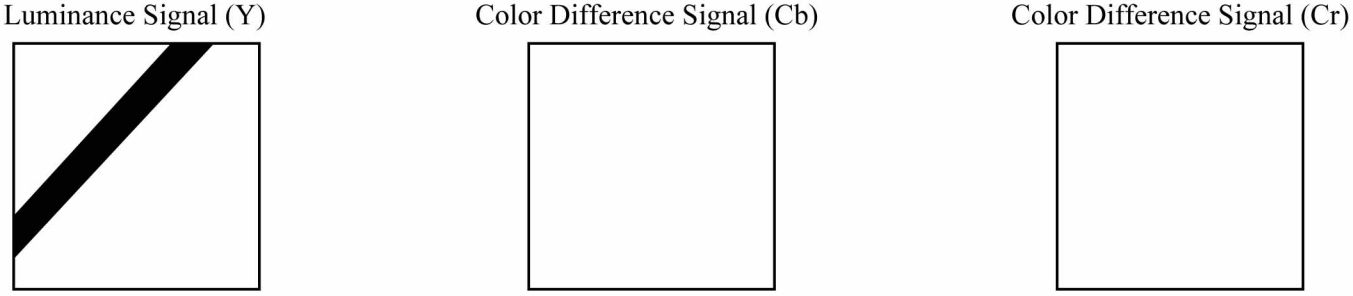

Start
ST21
Variable Length Decoding Process
ST22
Determine Largest Encoding Block Size and Upper Limit of Divided Hierarchical Layer Number
ST23
Determine Target Block to Be Decoded
ST24
Variable Length Decoding Process (Encoding Mode, Prediction Parameter, Transform Coefficient Data)
ST25
INTRA ?
NO
YES
ST26
Intra Prediction Process
ST27
Inter Prediction Process
ST28
Inverse Quantization and Inverse Transformation Process
ST29
Decoding Adding Process
ST30
NO
Are All Target Blocks to Be Decoded Processed?
YES
ST31
Loop Filter Process
End

FIG.13

(a)


Luminance Signal (Y)
Color Difference Signal (Cb)
Color Difference Signal (Cr)

(b)


Luminance Signal (Y)
Color Difference Signal (Cb)
Color Difference Signal (Cr)

(c)

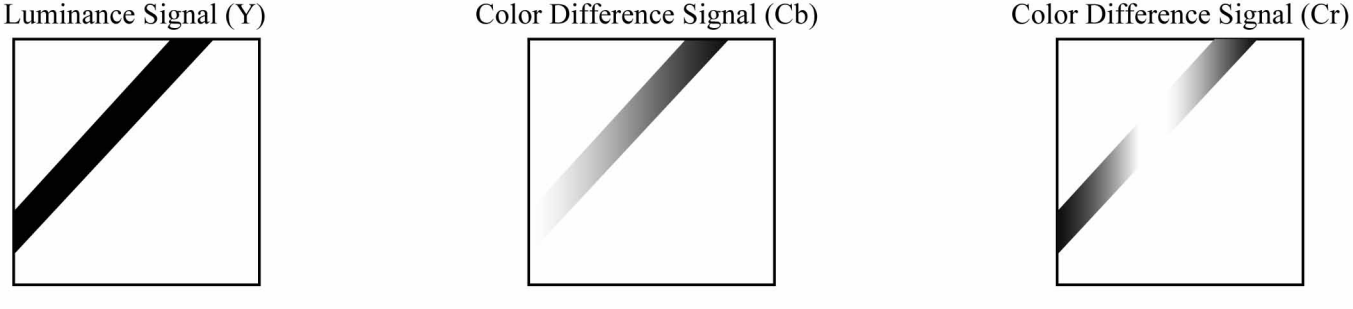

Luminance Signal (Y)
Color Difference Signal (Cb)
Color Difference Signal (Cr)

FIG.14

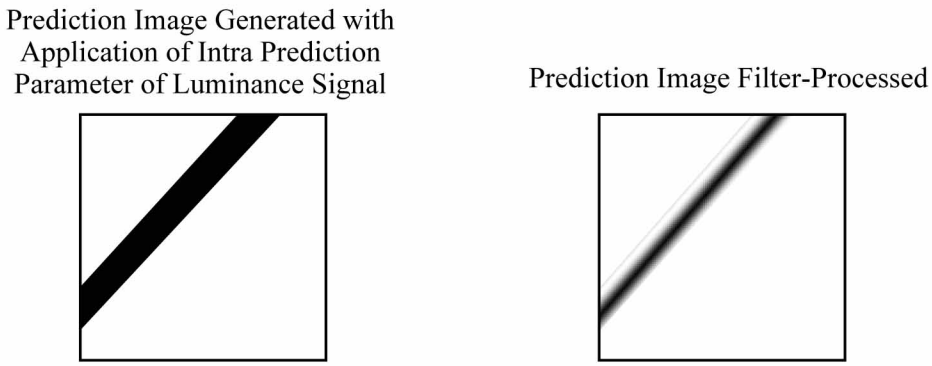
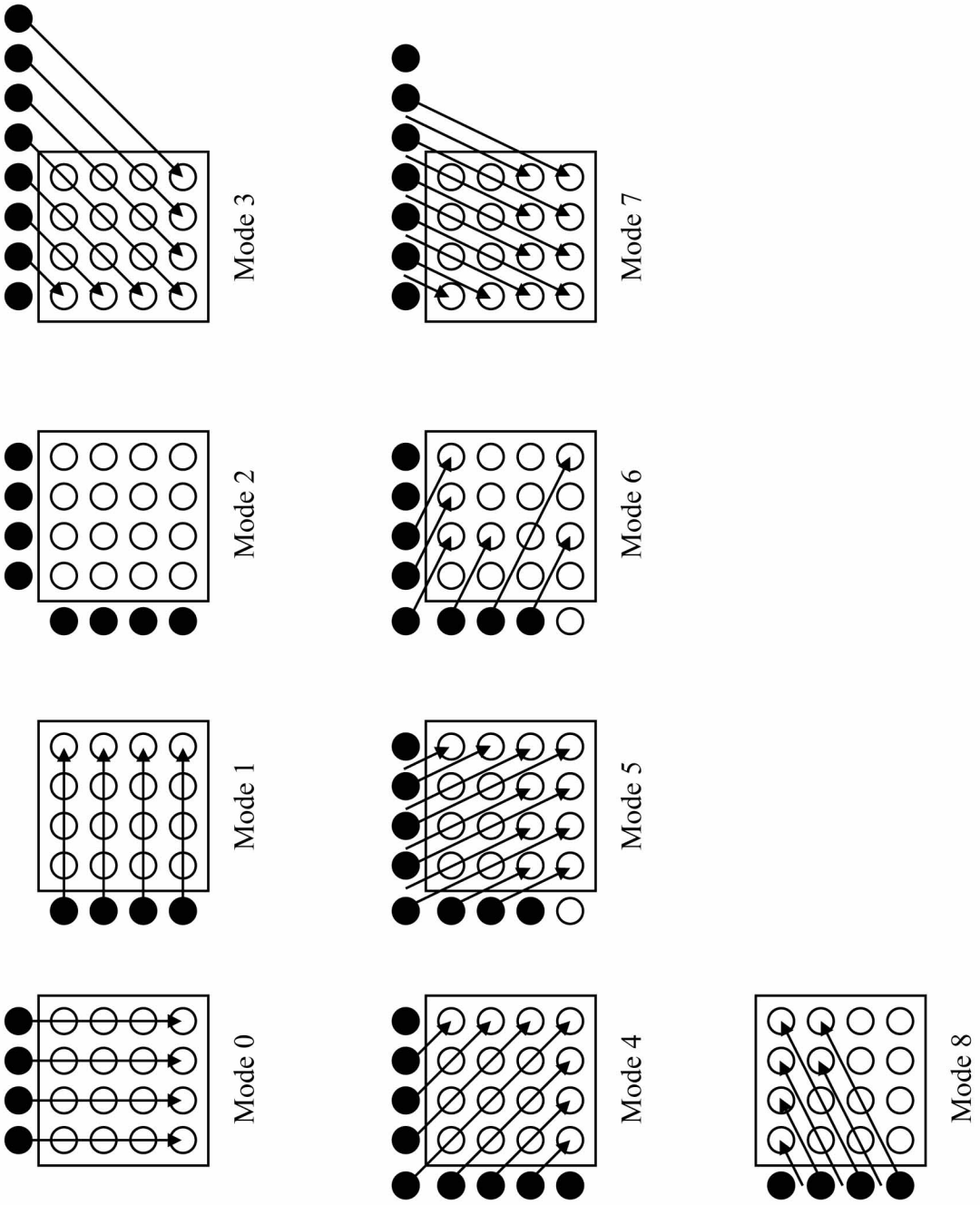

Prediction Image Generated with Application of Intra Prediction Parameter of Luminance Signal
Prediction Image Filter-Processed

FIG.15


Mode 0
Mode 1
Mode 2
Mode 3
Mode 4
Mode 5
Mode 6
Mode 7
Mode 8