【CLAIMS】

【Claim 1】

A method of decoding quantization parameter, comprising:

restoring a differential quantization parameter of a current coding unit;

generating a quantization parameter predictor of the current coding unit; and

generating a quantization parameter of the current coding unit using the differential quantization parameter and the quantization parameter predictor,

wherein the quantization parameter predictor is generated using one or two quantization parameters of a left quantization parameter, an above quantization parameter and a previous quantization parameter.

【Claim 2】

The method of claim 1, wherein the quantization parameter is generated per quantization unit and a minimum size of the quantization unit is adjusted per picture.

【Claim 3】

The method of claim 2, wherein the minimum size of the quantization unit is derived using a parameter specifying the depth of a minimum size of the quantization unit and the size of the largest coding unit.

【Claim 4】

The method of claim 1, wherein the differential quantization parameter is restored by arithmetic-decoding an encoded differential quantization parameter to generate a bin string and by applying inverse binarization to the bin string.

【Claim 5】

The method of claim 4, wherein the bin string comprises a bin for indicating whether the differential quantization parameter is equal to zero or not.

【Claim 6】

The method of claim 5, wherein if the differential quantization parameter is not zero, the bin string further comprises a bin for sign of the differential quantization parameter.

【Claim 7】

The method of claim 1, wherein if both of the left quantization parameter and the above quantization parameter are available, an average of the left quantization parameter and the above quantization parameter is set as the quantization parameter predictor.

【Claim 8】

The method of claim 1, wherein if the left quantization parameter is not available, an average of the above quantization parameter and the previous quantization parameter is set as the quantization parameter predictor.

CLAIMS

1. An apparatus of decoding an image, the apparatus comprising:

an intra prediction unit for generating a prediction block using an intra prediction mode of a current prediction unit;

an inverse scanning unit for inversely scanning significant flags, coefficient signs and coefficient levels according to an inverse scan pattern which is selected based on the intra prediction mode and a size of a transform unit to generate a quantized block;

an inverse quantization unit for inversely quantizing the quantized block using a quantization parameter and a quantization matrix to generate a transform block;

an inverse transform unit for inversely transform the transform block to generate a residual block; and

an adder for adding the prediction block and the residual block to generate a reconstructed block,

wherein the quantization parameter is generated using a differential quantization parameter and a quantization parameter predictor,

the differential quantization parameter is reconstructed using a bin string indicating an absolute value of the differential quantization parameter and a bin indicating a sign of the differential quantization parameter,

if two or more quantization parameters are available among a left quantization parameter, an above quantization parameter and a previous quantization parameter of a current coding unit, the quantization parameter predictor is generated

using two available quantization parameters determined according to a predetermined order, and

the quantization parameter is reconstructed per quantization unit, and a minimum size of the quantization unit is adjusted by a picture parameter set, and

wherein the intra prediction mode is reconstructed using a prediction mode group indicator, a prediction mode index and a Most Probable Mode (MPM) group including three intra prediction modes.

2. The apparatus of claim 1, wherein if only one quantization parameter is available, the available quantization parameter is set as the quantization parameter predictor.

3. The apparatus of claim 1, wherein the predetermined order is an order of the left quantization parameter, the above quantization parameter and the previous quantization parameter.

4. The apparatus of claim 1, wherein the size of the quantization unit is derived using a size of a Largest Coding Unit (LCU) and a parameter specifying depth of the minimum size of the quantization unit.

5. The apparatus of claim 1, wherein if the left and above quantization parameters are available, an average of the left and above quantization parameters is set as the quantization parameter predictor.

6. The apparatus of claim 1, wherein if the left quantization parameter is not available, an average of the above quantization parameter and the previous quantization parameter is set as the quantization parameter predictor.

7. The apparatus of claim 1, wherein if the size of the transform unit is equal to or larger than 8x8, the quantized block is generated using a last non-zero coefficient position and non-zero subset flags.

8. The apparatus of claim 1, wherein if the prediction mode group indicator does not indicate the MPM group, the intra prediction mode is determined by performing the following ordered steps:

when the prediction mode index is greater than or equal to a lowest mode number of three intra prediction modes, increasing the value of the prediction mode index by one;

when the prediction mode index is greater than or equal to a middle mode number of three intra prediction modes, increasing the value of the prediction mode index by one; and

when the prediction mode index is greater than or equal to a highest mode number of three intra prediction modes, increasing the value of the prediction mode index by one.

9. The apparatus of claim 1, wherein if only one of the left and above intra prediction modes is available and the available intra prediction mode is a DC mode, the MPM group includes the planar mode, the DC mode and a vertical mode.

10. The apparatus of claim 1, wherein if only one of the left and above intra prediction modes is available and the available intra prediction mode is a directional intra prediction mode, the MPM group includes the directional intra prediction mode, a planar mode and a DC mode.

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