

【CLAIMS】

1. An image coding apparatus, comprising:
 - an intra prediction unit configured to generate a prediction block using an intra prediction mode;
 - 5 an inter prediction unit configured to generate a prediction block using motion information;
 - a transform unit configured to transform residual signals generated from an original block and the prediction block to generate a transformed block;
 - a quantization unit configured to quantize the transformed block using a
 - 10 quantization parameter to generate a quantized block;
 - a scanning unit configured to determine a scan pattern and apply the scan pattern to the quantized block to generate one-dimensional coefficient information;
 - and
 - an entropy coding unit configured to entropy-code the one-dimensional
 - 15 coefficient information,
 - wherein the residual signals are transformed in transform unit, a transform type used for transforming the residual signals of luma component is determined by a prediction mode and a size of the transform unit, and a transform type used for transforming the residual signals of chroma components is a DCT-based integer
 - 20 transform,
 - wherein the quantization parameter is a luma quantization parameter, a differential quantization parameter is generated by subtracting a quantization parameter predictor from the quantization parameter, and the quantization parameter is entropy-coded,

wherein 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 a predetermined order, and if only one quantization parameter is available, the available quantization parameter is set as the quantization parameter predictor, and

wherein when a parameter indicating a relationship between the quantization parameter and a chroma quantization parameter is determined and included in a picture parameter set.

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2. The apparatus of claim 1, wherein when the residual signals are luma signals and a prediction mode is an intra prediction, the transform type used for transforming the residual signals is a DST-based integer transform if the size of the transform unit is smaller than 8×8 , and the type used for transforming the residual signals is a DCT-based integer transform if the size of the transform unit is not smaller than 8×8 .

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3. The apparatus of claim 1, wherein when the residual signals are chroma signals, the transform type used for transforming the residual signals is a DCT-based integer transform.

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4. 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.

5. 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.
- 5 6. The apparatus of claim 1, wherein the quantization parameter is generated per quantization unit, and a minimum size of the quantization unit is adjusted per picture.