【DESCRIPTION】

【Invention Title】

~~APPARATUS FOR~~ IMAGE ENCODING ~~A MOVING PICTURE~~APPARATUS

【Technical Field】

The present invention relates to an image processing apparatus and method, and more particularly, to an apparatus for reducing the amount of residual signals of an image and entropy-coding the residual signals.

【Background Art】

To efficiently transmit a moving picture signal at a low data rate while maintaining high image quality, various digital moving picture compression technologies have been proposed. These moving picture compression technologies include H.261, Motion Picture Experts Group (MPEG)-2/H.262, H.263, MPEG-4, Advanced Video Coding (AVC)/H.264, and so on. The compression technologies include a discrete cosine transform (DCT) scheme, a motion compensation (MC) scheme, a quantization scheme, an entropy coding scheme, and so on.

For image coding, each picture is divided into a plurality of slices, and each slice is divided into a plurality of coding blocks of a predetermined size. Since an image of a high-definition (HD) grade or above has many flat areas, an image compression can be improved by encoding the image with coding blocks that are larger than a macroblock (MB).

Therefore, new prediction technique is required and changes in transform coding, entropy coding, intra prediction and inter prediction is required as the size of

the coding unit increases to increase image compression ratio without increase of the complexity of image compression.

【Disclosure】

【Technical Problem】

The present invention is directed to an apparatus for encoding a moving picture, and more particularly, to an apparatus for effectively encoding transformed residual signals of a moving picture having a predetermined size or more.

【Technical Solution】

One aspect of the present invention provides an apparatus for encoding a moving picture, including: an intra prediction unit configured to determine a prediction mode and generate a prediction block; a transform/quantization unit configured to generate a residual block and ~~to~~ transform and quantize the residual block to generate a quantized block; and an entropy coder configured to entropy-code coefficients of the quantized block, wherein, when a size of the quantized block is equal to 8x8, the quantized block are divided into a plurality of subsets, and the plurality of subsets are scanned using a scan pattern determined according to the intra prediction mode, wherein a scan pattern for scanning non-zero coefficients of each subset is the same ~~with~~ as the scan pattern for the plurality of subsets, wherein a scan pattern for scanning flags indicating non-zero coefficients of each subset is the same ~~with~~ as the scan pattern for scanning non-zero coefficients of each subset.

Preferably, when the intra prediction mode is a vertical mode, the scan pattern for scanning the plurality of subsets is a horizontal scan.

Preferably, the plurality of subsets are inversely scanned ~~in a reverse direction~~.

【Advantageous Effects】

The present invention enables coding efficiency to be enhanced by reducing the amount of residual signals of a block to be encoded. Also, by effectively

【CLAIMS】

【Claim 1】

An apparatus for encoding a moving picture, comprising:

an intra prediction unit configured to determine a prediction mode and generate a prediction block;

a transform/quantization unit configured to generate a residual block and ~~to~~ transform and quantize the residual block to generate a quantized block; and

an entropy coder configured to entropy-code coefficients of the quantized block,

wherein, when a size of the quantized block is equal to 8x8, the quantized block are divided into a plurality of subsets, and the plurality of subsets are scanned using a scan pattern determined according to the intra prediction mode,

wherein a scan pattern for scanning non-zero coefficients of each subset is the same ~~with~~as the scan pattern for the plurality of subsets,

wherein a scan pattern for scanning flags indicating non-zero coefficients of each subset is the same ~~with~~as the scan pattern for scanning non-zero coefficients of each subset.

【Claim 2】

The apparatus of claim 1, wherein, when the intra prediction mode is a vertical mode, the scan pattern for scanning the plurality of subsets is a horizontal scan.

【Claim 3】

The apparatus of claim 2, wherein the plurality of subsets are inversely ~~scanned in a reverse direction~~.