

Claims

1. An intra-prediction method performed by an image decoding apparatus, the method comprising:

dividing, based on partitioning information of a coding block, the coding block into a plurality of sub-blocks, the partitioning information including at least one of first partitioning information indicating whether to divide into four sub-blocks, second partitioning information indicating whether to divide into two sub-blocks or third partitioning information indicating a partitioning direction;

determining a coding order of the sub-blocks based on the partitioning information and a size of the coding block; and

generating a prediction block of each sub-block based on the coding order of the sub-blocks and an intra-prediction mode of the each sub-block.

2. The method of claim 1, wherein the coding order is determined based on whether the coding block is divided in a vertical direction or a horizontal direction according to the third partitioning information.

3. The method of claim 2, wherein the coding order is determined by further considering whether or not a shape of the coding block is a non-square with a width greater than a height.

4. The method of claim 1, wherein determining the coding order of the coding block comprises obtaining, from a bitstream, selection information for determining the coding order of the coding block among pre-defined coding order candidates, and

wherein the coding order is determined by further considering the obtained selection information.

5. The method of claim 4, wherein the pre-defined coding order candidates include a horizontal scan and an inverse-horizontal scan.

6. The method of claim 5, wherein the prediction block is generated by using a

neighboring block of a current block,

wherein the current block is representative of one of the sub-blocks, and

wherein the neighboring block includes at least one of a left neighboring block, a top neighboring block, a top-left neighboring block, a bottom-left neighboring block, or a top-right neighboring block.

7. The method of claim 6, wherein the neighboring block further includes at least one of a right neighboring block or a bottom-right neighboring block.

8. The method of claim 7, wherein a position of the neighboring block for intra prediction of the current block is variably determined based on the determined coding order.

9. An intra-prediction method performed by an image encoding apparatus, the method comprising:

determining partitioning information for dividing a coding block into a plurality of sub-blocks, the partitioning information including at least one of first partitioning information indicating whether to divide into four sub-blocks, second partitioning information indicating whether to divide into two sub-blocks or third partitioning information indicating a partitioning direction;

determining a coding order of the sub-blocks based on the partitioning information and a size of the coding block; and

generating a prediction block of each sub-block based on the coding order of the sub-blocks and an intra-prediction mode of the each sub-block.

10. A non-transitory computer readable medium having stored thereon instructions that when executed by a processor perform a method, comprising:

dividing, based on partitioning information of a coding block, the coding block into a plurality of sub-blocks, the partitioning information including at least one of first partitioning information indicating whether to divide into four sub-blocks, second partitioning information indicating whether to divide into two sub-blocks or third partitioning information indicating a partitioning direction;

determining a coding order of the sub-blocks based on the partitioning information and a size of the coding block; and

generating a prediction block of each sub-block based on the coding order of the sub-blocks and an intra-prediction mode of the each sub-block.

11. A non-transitory computer readable recording medium storing a bitstream that is generated by an intra-prediction method performed by an image encoding apparatus, the intra-prediction method comprising:

determining partitioning information for dividing a coding block into a plurality of sub-blocks, the partitioning information including at least one of first partitioning information indicating whether to divide into four sub-blocks, second partitioning information indicating whether to divide into two sub-blocks or third partitioning information indicating a partitioning direction;

determining a coding order of the sub-blocks based on the partitioning information and a size of the coding block; and

generating a prediction block of each sub-block based on the coding order of the sub-blocks and an intra-prediction mode of the each sub-block.