

CLAIMS

1. An image encoding device adapted to segment an image into blocks and encode the image in units of blocks resulting from segmenting the image, comprising:

a block segmentation unit that recursively segments the image into rectangles of a predetermined size to generate a target block subject to encoding; and

an encoding unit that encodes block segmentation information of the target block, wherein

the block segmentation unit includes:

a quartering unit that quarters the target block in recursive segmentation in a horizontal direction and a vertical direction to generate four blocks; and

a halving unit that halves the target block in recursive segmentation in a horizontal direction or a vertical direction to generate two blocks,

wherein the block segmentation information contains a first flag indicating whether to quarter the target block and a second flag indicating whether to halve the target block,

wherein the second flag is encoded in case that the first flag indicates that the target block is not quartered, and

wherein when previous recursive segmentation is halving and the target block is of a predetermined size or smaller, the halving unit prohibits the target block subject to

current recursive segmentation from being segmented in the same direction as a direction in which the target block was segmented in the previous recursive segmentation.

2. An image encoding method adapted to segment an image into blocks and encode the image in units of blocks resulting from segmenting the image, comprising:

recursively segmenting the image into rectangles of a predetermined size to generate a target block subject to encoding; and

encoding block segmentation information of the target block, wherein

the segmenting includes:

quartering the target block in recursive segmentation in a horizontal direction and a vertical direction to generate four blocks; and

halving the target block in recursive segmentation in a horizontal direction or a vertical direction to generate two blocks,

wherein the block segmentation information contains a first flag indicating whether to quarter the target block and a second flag indicating whether to halve the target block,

wherein the second flag is encoded in case that the first flag indicates that the target block is not quartered, and

wherein when previous recursive segmentation is halving

and the target block is of a predetermined size or smaller, the halving prohibits the target block subject to current recursive segmentation from being segmented in the same direction as a direction in which the target block was segmented in the previous recursive segmentation.

3. An image encoding program adapted to segment an image into blocks and encode the image in units of blocks resulting from segmenting the image, the program comprising computer-implemented modules including:

a block segmentation module that recursively segments the image into rectangles of a predetermined size to generate a target block subject to encoding; and

an encoding module that encodes block segmentation information of the target block, wherein

the block segmentation module includes:

a quartering module that quarters the target block in recursive segmentation in a horizontal direction and a vertical direction to generate four blocks; and

a halving module that halves the target block in recursive segmentation in a horizontal direction or a vertical direction to generate two blocks,

wherein the block segmentation information contains a first flag indicating whether to quarter the target block and a second flag indicating whether to halve the target block,

wherein the second flag is encoded in case that the

first flag indicates that the target block is not quartered, and

wherein when previous recursive segmentation is halving and the target block is of a predetermined size or smaller, the halving module prohibits the target block subject to current recursive segmentation from being segmented in the same direction as a direction in which the target block was segmented in the previous recursive segmentation.

4. An image decoding device adapted to decode an image in units of blocks resulting from segmenting the image, comprising:

a block segmentation unit that generates a target block subject to decoding based on decoded recursive block segmentation information; and

a decoding unit that decodes the target block, wherein the block segmentation unit includes:

a quartering unit that quarters the target block in recursive segmentation in a horizontal direction and a vertical direction to generate four blocks; and

a halving unit that halves the target block in recursive segmentation in a horizontal direction or a vertical direction to generate two blocks,

wherein the block segmentation information contains a first flag indicating whether to quarter the target block and a second flag indicating whether to halve the target block,

wherein the second flag is encoded in case that the first flag indicates that the target block is not quartered, and

wherein when previous recursive segmentation is halving and the target block is of a predetermined size or smaller, the halving unit prohibits the target block subject to current recursive segmentation from being segmented in the same direction as a direction in which the target block was segmented in the previous recursive segmentation.

5. An image decoding method adapted to decode an image in units of blocks resulting from segmenting the image, comprising:

generating a target block subject to decoding based on decoded recursive block segmentation information; and

decoding the target block, wherein

the segmenting includes:

quartering the target block in recursive segmentation in a horizontal direction and a vertical direction to generate four blocks; and

halving the target block in recursive segmentation in a horizontal direction or a vertical direction to generate two blocks,

wherein the block segmentation information contains a first flag indicating whether to quarter the target block and a second flag indicating whether to halve the target block,

wherein the second flag is encoded in case that the first flag indicates that the target block is not quartered, and

wherein when previous recursive segmentation is halving and the target block is of a predetermined size or smaller, the halving prohibits the target block subject to current recursive segmentation from being segmented in the same direction as a direction in which the target block was segmented in the previous recursive segmentation.

6. An image decoding program adapted to decode an image in units of blocks resulting from segmenting the image, the program comprising computer-implemented modules including:

a block segmentation module that generates a target block subject to decoding based on decoded recursive block segmentation information; and

a decoding module that decodes the target block, wherein

the block segmentation module includes:

a quartering module that quarters the target block in recursive segmentation in a horizontal direction and a vertical direction to generate four blocks; and

a halving module that halves the target block in recursive segmentation in a horizontal direction or a vertical direction to generate two blocks,

wherein the block segmentation information contains a

first flag indicating whether to quarter the target block and a second flag indicating whether to halve the target block,

wherein the second flag is encoded in case that the first flag indicates that the target block is not quartered, and

wherein when previous recursive segmentation is halving and the target block is of a predetermined size or smaller, the halving module prohibits the target block subject to current recursive segmentation from being segmented in the same direction as a direction in which the target block was segmented in the previous recursive segmentation.

7. A storing method for storing a bitstream formed by the image encoding method according to claim 2 in a recording medium.

8. A transmitting method for transmitting a bitstream formed by the image encoding method according to claim 2.