

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;

an inter prediction unit that generates a predicted image signal using an image signal of a coded picture; 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 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;

generating a predicted image signal using an image signal of a coded picture; 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 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;

- an inter prediction module that generates a predicted image signal using an image signal of a coded picture; 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 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 block subject to decoding based on decoded recursive block segmentation information;

an inter prediction unit that generates a predicted image signal using an image signal of a decoded picture; and

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

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

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

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 block subject to decoding based on decoded recursive block segmentation information;

generating a predicted image signal using an image

signal of a decoded picture; and

decoding the block, wherein

the segmenting includes:

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

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

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 block subject to decoding based on decoded recursive block segmentation information;

an inter prediction module that generates a predicted image signal using an image signal of a decoded picture; and

a decoding module that decodes the block, wherein the block segmentation module includes:

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

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

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.