

CLAIMS

1. An image decoding method comprising:
 - determining a plurality of blocks in a current image by hierarchically splitting the current image, based on a split shape mode of a block included in the current image;
 - generating a first prediction block by performing prediction on a first block which is one of the plurality of blocks;
 - generating a first reconstruction block by using the first prediction block;
 - generating a second prediction block by performing prediction on a second block which is adjacent to the first block among the plurality of blocks;
 - generating a second reconstruction block by using the second prediction block;
 - and
 - reconstructing the current image by performing deblocking filtering on a boundary of the first reconstruction block and the second reconstruction block, wherein the reconstructing of the current image by performing deblocking filtering on the boundary of the first reconstruction block and the second reconstruction block comprises,
 - when a prediction mode of at least one reconstruction block from among the first reconstruction block or the second reconstruction block is a combined inter-intra prediction mode, determining that a value of a boundary filtering strength applied to the boundary of the first reconstruction block and the second reconstruction block is a predetermined value, and performing deblocking filtering on the boundary of the first reconstruction block and the second reconstruction block based on the determined value of the boundary filtering strength, and
 - wherein when the prediction mode of the at least one reconstruction block is the combined inter-intra prediction mode, a sample value of the at least one prediction block among the first prediction block or the second prediction block is determined based on a weighted sum of a first sample value of the at least one prediction block generated based on intra prediction and a second sample value of the at least one prediction block generated based on inter prediction.

2. The image decoding method of claim 1, wherein the performing of the deblocking filtering on the boundary of the first reconstruction block and the second reconstruction block based on the determined value of the boundary filtering strength comprises,

when a size of the at least one reconstruction block is $4 \times N$ or $N \times 4$ (where N is an integer equal to or greater than 4), determining that the number of pixels in at least one reconstruction block whose pixel value is changed during the deblocking filtering in units of rows or columns at a vertical boundary corresponding to the size of $4 \times N$ or at a horizontal boundary corresponding to the size of $N \times 4$ is 1.

3. The image decoding method of claim 1, wherein the predetermined value is 1 or 2.

4. The image decoding method of claim 1, wherein the predetermined value is a value that is the same as a value of a boundary filtering strength used when a prediction mode of at least one reconstruction block from among the first reconstruction block or the second reconstruction block is an intra prediction mode.

5. The image decoding method of claim 1, wherein the predetermined value is a value that is the same as a value of a boundary filtering strength used when prediction modes of the first reconstruction block and the second reconstruction block are inter prediction modes.

6. The image decoding method of claim 1, wherein the determining that the value of the boundary filtering strength applied to the boundary of the first reconstruction block and the second reconstruction block is the predetermined value and the performing of the deblocking filtering on the boundary of the first reconstruction block and the second reconstruction block based on the determined value of the boundary filtering strength when the prediction mode of at least one reconstruction block from among the first reconstruction block or the second reconstruction block is the combined inter-intra prediction mode comprises,

when a size of the at least one reconstruction block is equal to or greater than

a predetermined size and a prediction mode of the at least one reconstruction block is the combined inter-intra prediction mode, determining that the value of the boundary filtering strength applied to the boundary of the first reconstruction block and the second reconstruction block is the predetermined value.

7. The image decoding method of claim 1, wherein the determining that the value of the boundary filtering strength applied to the boundary of the first reconstruction block and the second reconstruction block is the predetermined value and the performing of the deblocking filtering on the boundary of the first reconstruction block and the second reconstruction block based on the determined value of the boundary filtering strength when the prediction mode of at least one reconstruction block from among the first reconstruction block or the second reconstruction block is the combined inter-intra prediction mode comprises,

when a size of the at least one reconstruction block is equal to or less than a predetermined size and a prediction mode of the at least one reconstruction block is a combined inter-intra prediction mode, determining that the value of the boundary filtering strength applied to the boundary of the first reconstruction block and the second reconstruction block is the predetermined value.

8. The image decoding method of claim 1, wherein the split shape mode is a mode based on a split type comprising one of quad split, binary split, and tri-split.

9. An image decoding apparatus comprising at least one processor configured to determine a plurality of blocks in a current image by hierarchically splitting the current image based on a split shape mode of a block included in the current image, generate a first prediction block by performing prediction on a first block which is one of the plurality of blocks, generate a first reconstruction block by using the first prediction block, generate a second prediction block by performing prediction on a second block which is adjacent to the first block among the plurality of blocks, generate a second reconstruction block by using the second prediction block, and reconstruct the current image by performing deblocking filtering on a boundary of the first reconstruction block and the second reconstruction block,

wherein, when the at least one processor reconstructs the current image by performing deblocking filtering on the boundary of the first reconstruction block and the second reconstruction block,

a prediction mode of at least one reconstruction block from among the first reconstruction block or the second reconstruction block is the combined inter-intra prediction mode, the at least one processor determines that a value of a boundary filtering strength applied to the boundary of the first reconstruction block and the second reconstruction block is a predetermined value, and performs deblocking filtering on the boundary of the first reconstruction block and the second reconstruction block based on the determined value of the boundary filtering strength, and

wherein when the prediction mode of the at least one reconstruction block is the combined inter-intra prediction mode, a sample value of the at least one prediction block among the first prediction block or the second prediction block is determined based on a weighted sum of a first sample value of the at least one prediction block generated based on intra prediction and a second sample value of the at least one prediction block generated based on inter prediction.

10. The image decoding apparatus of claim 9, wherein the predetermined value is 1 or 2.

11. The image decoding apparatus of claim 9, wherein the predetermined value is a value that is the same as a value of a boundary filtering strength used when at least one reconstruction block from among the first reconstruction block or the second reconstruction block is an intra prediction mode.

12. The image decoding apparatus of claim 9, wherein the predetermined value is a value that is the same as a value of a boundary filtering strength used when prediction modes of the first reconstruction block and the second reconstruction block are inter prediction modes.

13. The image decoding apparatus of claim 9, wherein, when the at least one processor determines that the value of the boundary filtering strength applied to

the boundary of the first reconstruction block and the second reconstruction block is the predetermined value and performs the deblocking filtering on the boundary of the first reconstruction block and the second reconstruction block based on the determined value of the boundary filtering strength when a prediction mode of at least one reconstruction block from among the first reconstruction block or the second reconstruction block is the combined inter-intra prediction mode,

when a size of the at least one reconstruction block is equal to or greater than a predetermined size and a prediction mode of the at least one reconstruction block is the combined inter-intra prediction mode, the at least one processor determines that the value of the boundary filtering strength applied to the boundary of the first reconstruction block and the second reconstruction block is the predetermined value.

14. The image decoding apparatus of claim 9, wherein, when the at least one processor determines that the value of the boundary filtering strength applied to the boundary of the first reconstruction block and the second reconstruction block is the predetermined value and performs the deblocking filtering on the boundary of the first reconstruction block and the second reconstruction block based on the determined value of the boundary filtering strength when the prediction mode of the at least one reconstruction block from among the first reconstruction block or the second reconstruction block is the combined inter-intra prediction mode,

when a size of the at least one reconstruction block is equal to or less than a predetermined size and a prediction mode of the at least one reconstruction block is the combined inter-intra prediction mode, the at least one processor determines that the value of the boundary filtering strength applied to the boundary of the first reconstruction block and the second reconstruction block is the predetermined value.

15. An image encoding method comprising: determining a plurality of blocks in a current image by hierarchically splitting the current image based on a split shape mode of a block included in the current image;

generating a first prediction block by performing prediction on a first block which is one of the plurality of blocks;

generating a first reconstruction block by using the first prediction block;

generating a second prediction block by performing prediction on a second block which is adjacent to the first block from among the plurality of blocks;

generating a second reconstruction block by using the second prediction block;
and

performing deblocking filtering on a boundary of the first reconstruction block and the second reconstruction block ,

wherein the performing of the deblocking filtering on the boundary of the first reconstruction block and the second reconstruction block comprises,

when a prediction mode of at least one reconstruction block from among the first reconstruction block or the second reconstruction block is a combined inter-intra prediction mode, determining that a value of a boundary filtering strength applied to the boundary of the first reconstruction block and the second reconstruction block is a predetermined value and performing deblocking filtering on the boundary of the first reconstruction block and the second reconstruction block based on the determined value of the boundary filtering strength, and

wherein when the prediction mode of the at least one reconstruction block is the combined inter-intra prediction mode, a sample value of the at least one prediction block among the first prediction block or the second prediction block is determined based on a weighted sum of a first sample value of the at least one prediction block generated based on intra prediction and a second sample value of the at least one prediction block generated based on inter prediction.

16. A non-transitory computer-readable recording medium having recorded thereon a program for executing the image decoding method of claim 1.