CLAIMS

1. A motion vector prediction method for inter prediction, the motion vector prediction method comprising:

determining a plurality of candidate blocks that are referred to so as to predict a motion vector of a current block, from neighboring blocks of the current block;

determining a candidate motion vector of a first candidate block in the plurality of candidate blocks, based on whether a reference image of the first candidate block and a reference image of the current block are each a long-term reference image; and

determining the motion vector of the current block by using a candidate motion vector list including the determined candidate motion vector of the first candidate block and candidate motion vectors from remaining candidate blocks.

2. The motion vector prediction method of claim 1, wherein the determining of the candidate motion vector of the first candidate block comprises, when both of the reference image of the current block and the reference image of the first candidate block are long-term reference images, determining a current motion vector of the first candidate block as the candidate motion vector of the first candidate block.

3. The motion vector prediction method of claim 1, wherein the determining of the candidate motion vector of the first candidate block comprises, when both of the reference image of the current block and the reference image of the first candidate block are short-term reference images, changing a current motion vector of the first candidate block based on a ratio of a distance between a current image and the reference image of the current block and a distance between an image of the first candidate block and the reference image of the first candidate block, and determining the changed current motion vector as the candidate motion vector of the first candidate block.

4. The motion vector prediction method of claim 1, wherein the

determining of the candidate motion vector of the first candidate block comprises:

determining whether the reference image of the current block and the reference image of the first candidate block are identical; and

when the reference image of the current block and the reference image of the first candidate block are not identical, determining whether the reference image of the current block and the reference image of the first candidate block are each a long-term reference image.

5. The motion vector prediction method of claim 1, wherein the determining of the candidate motion vector of the first candidate block comprises, when one of the reference image of the current block and the reference image of the first candidate block is a short-term reference image and the other one is a long-term reference image, setting reference possibility information of the first candidate block to a disabled state.

6. The motion vector prediction method of claim 1, wherein the determining of the candidate motion vector of the first candidate block comprises, when one of the reference image of the current block and the reference image of the first candidate block is a short-term reference image and the other one is a long-term reference image, setting the candidate motion vector of the first candidate block to 0.

7. The motion vector prediction method of claim 1, wherein the first candidate block is a neighboring block of the current block in a current image including the current block, or a collocated block at a same location as the current block in an image restored prior to the current image.

8. The motion vector prediction method of claim 1, wherein the determining of the candidate motion vector of the first candidate block comprises:

determining whether the reference image of the current block is a long-term reference image by using a long-term reference index indicating whether the reference image of the current block is a long-term reference image; and

determining whether the reference image of the first candidate block is a

long-term reference image by using a long-term reference index of the first candidate block.

9. The motion vector prediction method of claim 1, wherein the determining of the motion vector of the current block comprises:

determining a candidate block which is to be a merge block of the current block and whose prediction information is to be used as prediction information of the current block by using candidate motion vectors included in the candidate motion vector list; and

encoding the prediction information of the determined candidate block as prediction information of the current block.

10. The motion vector prediction method of claim 1, wherein the determining of the motion vector of the current block comprises predicting the motion vector of the current block by combining at least one of candidate motion vectors included in the candidate motion vector list.

11. The motion vector prediction method of claim 1, further comprising:

determining a reference block indicated by the determined motion vector of the current block, from a reference image of the current block, and generating residual data between the determined reference block and the current block; and

generating quantized transformation coefficients by performing transformation and quantization on the residual data.

12. The motion vector prediction method of claim 1, further comprising:

receiving a reference index and quantized transformation coefficients of the current block, and motion vector of the first candidate block;

restoring residual data of the current block by performing dequantization and inverse transformation on the received quantized transformation coefficients of the current block; and

determining a reference block indicated by the determined motion vector of the current block, from a reference image of the current block indicated by the received reference index of the current block, and restoring the current block by

synthesizing the determined reference block and the residual data of the current block.

13. A motion vector prediction apparatus for inter prediction, the motion vector prediction apparatus comprising:

a candidate block determiner for determining a plurality of candidate blocks that are referred to so as to predict a motion vector of a current block, from neighboring blocks of the current block, and determining a candidate motion vector of a first candidate block in the plurality of candidate blocks, based on whether a reference image of the first candidate block and a reference image of the current block are each a long-term reference image; and

a motion vector determiner for determining the motion vector of the current block by using a candidate motion vector list including the determined candidate motion vector of the first candidate block and candidate motion vectors from remaining candidate blocks.

14. The motion vector prediction apparatus of claim 13, wherein the candidate block determiner determines a current motion vector of the first candidate block as the candidate motion vector of the first candidate block when both of the reference image of the current block and the reference image of the first candidate block are long-term reference images, and determines a motion vector of the first candidate block, which is obtained by changing a current motion vector of the first candidate block based on a ratio of a distance between a current image and the reference image of the current block and a distance between an image of the first candidate block and the reference image of the first candidate block, as the candidate motion vector of the first candidate block, when both of the reference image of the current block and the reference image of the first candidate block are short-term reference images.

15. The motion vector prediction apparatus of claim 13, wherein the candidate block determiner, when both of the reference image of the current block and the reference image of the first candidate block are short-term reference images, changes a motion vector of the first candidate block based on a ratio of a

distance between a current image and the reference image of the current block and a distance between an image of the first candidate block and the reference image of the first candidate block, and uses the changed motion vector from the candidate motion vector list.

CLAIMS

1. A method of decoding an image, the method comprising:

determining a collocated block at a same location as a current block in an image restored before the current image;

when one of a reference picture of the collocated block or a reference picture of the current block is a long-term reference picture, determining that a motion vector of the collocated block is un-available;

when both the reference picture of the collocated block and the reference picture of the current block are long-term reference pictures, obtaining a temporal motion vector prediction candidate without scaling the motion vector of the collocated block;

when both the reference picture of the current block and the reference picture of the collocated block are short-term reference pictures, obtaining the temporal motion vector prediction candidate by scaling the motion vector of the collocated block;

determining a motion vector estimator of the current block from among motion vector prediction candidates including the temporal motion vector prediction candidate; and

generating a motion vector of the current block based on the motion vector estimator,

wherein the current image is split into at least one maximum coding unit,

the at least one maximum coding unit is hierarchically split into a coding unit of a depth including at least one of a current depth and a lower depth according to split information,

when the split information indicates a split for the current depth, a coding unit of the current depth is split into four coding units of the lower depth that are square independently from neighboring coding units, and

when the split information indicates a non-split of the current depth, at least one prediction unit including a current prediction unit is obtained based on the coding unit of the current depth.