

CLAIMS

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

5 determining a candidate motion vector list comprising motion vectors of a plurality of candidate blocks referred so as to predict a motion vector of a current block;

10 when a reference image of a first candidate block from among the plurality of candidate blocks is different from a reference image of the current block, determining whether or not to use a motion vector of the first candidate block from the candidate motion vector list, based on whether each of the reference image of the current block and the reference image of the first candidate block is a short-term reference image or a long-term reference image; and

15 determining the motion vector of the current block by using a candidate motion vector selected from among the motion vectors comprised in the candidate motion vector list.

20 2. The motion vector determining method of claim 1, wherein, when all of the reference image of the current block and the reference image of the first candidate block are the long-term reference images, the determining of whether or not to use the motion vector comprises maintaining the motion vector of the first candidate block in the candidate motion vector list.

25 3. The motion vector determining method of claim 1, wherein, when one of the reference image of the current block and the reference image of the first candidate block is the short-term reference image, and the other one of the reference image of the current block and the reference image of the first candidate block is the long-term reference image, the determining of whether or not to use the motion vector comprises determining not to use the motion vector of the first candidate block in the candidate motion vector list.

30 4. The motion vector determining method of claim 1, wherein the first candidate block is a neighboring block of the current block in a current image of the

current block or is a collocated block at the same position as the current block in an image that is restored earlier than the current image.

5 5. The motion vector determining method of claim 1, wherein, regardless
of whether the reference image of the current block is the short-term reference
image or the long-term reference image, the determining of the motion vector of the
current block comprises determining a reference block indicated by the motion vector
of the current block that is determined in the reference image of the current block
according to a picture order count (POC) indicated by a reference index of the
10 current block.

6. The motion vector determining method of claim 1, wherein the
determining of whether or not to use the motion vector comprises:

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

20 determining whether the reference image of the first candidate block is the
long-term reference image, by using a long-term reference index of the first
candidate block.

7. The motion vector determining method of claim 1, further comprising:
determining a reference block that is indicated by the motion vector of the
current block in the reference image of the current block, and generating residual
data between the reference block and the current block; and

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

8. The motion vector determining method of claim 1, further comprising:
receiving a reference index and quantized transform coefficients of the current
30 block, and the motion vector of the first candidate block;
performing inverse-quantization and inverse-transformation on the quantized
transform coefficients of the current block and thus restoring residual data of the
current block; and

determining a reference block indicated by the motion vector of the current block in the reference image of the current block indicated by a reference index of the current block, synthesizing the reference block and residual data of the current block, and thus restoring the current block.

5 9. A motion vector determining apparatus for inter prediction, the motion vector determining apparatus comprising:

10 a candidate list determining unit for determining a candidate motion vector list comprising motion vectors of a plurality of candidate blocks referred so as to predict a motion vector of a current block and, when a reference image of a first candidate block from among the plurality of candidate blocks is different from a reference image of the current block, for determining whether or not to use a motion vector of the first candidate block from the candidate motion vector list, based on whether each of the reference image of the current block and the reference image of the first candidate block is a short-term reference image or a long-term reference image; and

15 a motion vector determining unit for determining the motion vector of the current block by using a candidate motion vector selected from among the motion vectors comprised in the candidate motion vector list.

20 10. The motion vector determining apparatus of claim 9, wherein, when all of the reference image of the current block and the reference image of the first candidate block are the long-term reference images, the candidate list determining unit maintains the motion vector of the first candidate block in the candidate motion vector list.

25 11. The motion vector determining apparatus of claim 9, wherein, when one of the reference image of the current block and the reference image of the first candidate block is the short-term reference image, and the other one of the reference image of the current block and the reference image of the first candidate block is the long-term reference image, the candidate list determining unit determines not to use the motion vector of the first candidate block in the candidate motion vector list.

30

12. The motion vector determining apparatus of claim 9, wherein the first candidate block is a neighboring block of the current block in a current image of the current block or is a collocated block at the same position as the current block in an image that is restored earlier than the current image.

13. The motion vector determining apparatus of claim 9, wherein the motion vector determining apparatus comprises:

an inter prediction unit for determining a reference block that is indicated by the motion vector of the current block in the reference image of the current block, and for generating residual data between the reference block and the current block; and

a transformation and quantization unit for performing transformation and quantization on the residual data and for generating quantized transform coefficients.

14. The motion vector determining apparatus of claim 9, wherein the motion vector determining apparatus receives a reference index and quantized transform coefficients of the current block, and the motion vector of the first candidate block, and further comprises:

an inverse-quantization and inverse-transformation unit for performing inverse-quantization and inverse-transformation on the quantized transform coefficients of the current block and for restoring residual data of the current block; and

a motion compensation unit for determining a reference block indicated by the motion vector of the current block in the reference image of the current block indicated by a reference index of the current block, for synthesizing the reference block and residual data of the current block, and for restoring the current block.

15. A computer-readable recording medium having recorded thereon a computer program for executing the motion vector determining method of claim 1.

CLAIMS

1. An apparatus for decoding an image, the apparatus comprising:
 - a reference picture comparing unit for determining whether both of a reference picture of a candidate block and a reference picture of a current block are long-term reference pictures, wherein the candidate block is from among a plurality of candidate blocks adjacent to the current block; and
 - a motion vector determiner for, when both of the reference picture of the candidate block and the reference picture of the current block is the long-term reference picture, obtaining a spatial motion vector prediction candidate without scaling a motion vector of the candidate block, when both of the reference picture of the current block and the reference picture of the candidate block are different short-term reference pictures, obtaining the spatial motion vector prediction candidate by scaling the motion vector of the candidate block, determining a motion vector prediction of the current block from among motion vector prediction candidates comprising the spatial motion vector prediction candidate, and generating the motion vector of the current block by using the motion vector prediction.