

CLAIMS

1. A method of video coding with affine motion compensation in a video coding system, comprising:

receiving input data associated with a current block in a current picture at a video encoder or receiving a video bitstream corresponding to compressed data including the current block in the current picture at a video decoder, wherein the current block is coded or to be coded in an affine mode according to an affine motion model;

retrieving two or more motion vectors from an identical neighboring block from a temporal buffer for the current block, wherein at least one of the retrieved motion vectors is not corresponding to a sub-block in a first neighboring NxN block row closest to a top boundary of the current block or a first neighboring NxN block column closest to a left boundary of the current block, wherein the temporal buffer stores selective motion vectors less than all motion vectors of previous coded blocks in the current picture, and NxN is a block size for storing one motion vector in the temporal buffer;

deriving an affine candidate including affine motion vectors using the retrieved two or more motion vectors of the identical neighboring block; and

encoding or decoding the current block by predicting the current block using one or more motion compensated blocks by the derived affine candidate, wherein the affine motion vectors predict a motion vector at a control point of the current block and a corresponding point of the one or more motion compensated blocks.

2. The method of Claim 1, wherein the temporal buffer stores motion vectors of 2 NxN block rows and 2 NxN block columns, and the 2 NxN block rows include the first neighboring NxN block row and a second neighboring NxN block row that are closest to the top boundary of the current block, and the 2 NxN block columns include the first neighboring NxN block column and a second neighboring NxN block column closest to the left boundary of the current block.

3. The method of Claim 1, wherein the retrieved two or more motion vectors includes first and second motion vectors, the first motion vector is a replacing motion vector replacing an original motion vector at an upper-left corner of the neighboring block and the second motion vector is a replacing motion vector replacing an original motion vector at an upper-right corner of the neighboring block if the neighboring block is above the current block or adjacent to an upper-left corner of the current block; wherein the first motion vector is a replacing motion vector replacing an original motion vector at an

upper-left corner of the neighboring block and the second motion vector is an original motion vector at an upper-right corner of the neighboring block if the neighboring block is on the left side of the current block.

4. The method of Claim 1, wherein the retrieved two or more motion vectors includes first and second motion vectors of first and second sub-blocks in the neighboring block, said deriving an affine candidate further comprises:

deriving a first affine motion vector of the affine motion vectors using the first and second motion vectors, a pixel position of the current block relative to the current picture, a pixel position of the first sub-block relative to the current picture, and a width of the neighboring block; and

deriving a second affine motion vector using the first and second motion vectors, the width of the neighboring block, and a width of the current block.

5. The method of Claim 1, wherein the retrieved two or more motion vectors includes first, second and third motion vectors of first, second and third sub-blocks in the neighboring block, wherein deriving the affine candidate further comprises:

deriving a first affine motion vector of the affine motion vectors using at least two of the first, second and third motion vectors, a pixel position of the current block relative to the current picture, a pixel position of the first sub-block relative to the current picture, and a width of the neighboring block;

deriving a second affine motion vector using the first and second motion vectors, the width of the neighboring block, and a width of the current block; and

deriving a third affine motion vector using the first and third motion vectors and at least one of a height of the neighboring block and a height of the current block.

6. The method of Claim 2, wherein the retrieved two or more motion vectors includes first, second and third motion vectors, the first motion vector is a replacing motion vector replacing an original motion vector at an upper-left corner of the neighboring block, the second motion vector is a replacing motion vector replacing an original motion vector at an upper-right corner of the neighboring block, and the third motion vector is an original motion vector at a lower-left corner of the neighboring block if the neighboring block is above the current block; wherein the first motion vector is a replacing motion vector replacing an original motion vector at an upper-left corner of the neighboring block, the second motion vector is a replacing motion vector replacing an original motion vector at an upper-right corner of the neighboring block, and the third motion vector is a replacing motion vector replacing an original motion vector at a lower-left corner of the neighboring block if the neighboring block is adjacent to an upper-left

corner of the current block; and wherein the first motion vector is a replacing motion vector replacing an original motion vector at an upper-left corner of the neighboring block, the second motion vector is an original motion vector at an upper-right corner of the neighboring block, and the third motion vector is a replacing motion vector replacing an original motion vector at a lower-left corner of the neighboring block if the neighboring block is on the left side of the current block.

7. The method of Claim 1, wherein the current block is predicted by said one or more motion compensated blocks by the affine motion vectors in the affine candidate according to a four-parameter affine motion model with two control points or according to a six-parameter affine motion model with three control points.

8. The method of Claim 1, wherein the temporal buffer stores M $N \times N$ block rows above the current block, and M is less than a largest coding unit height divided by N .

9. The method of Claim 1, wherein the retrieved two or more motion vectors are original motion vectors at two or more control points of the neighboring block.

10. The method of Claim 9 wherein the control points of the neighboring block include at least two of an upper-left corner, an upper-right corner, a bottom-right corner, and a bottom-left corner of the neighboring block.

11. The method of Claim 9, wherein the temporal buffer stores original motion vectors of a first neighboring $N \times N$ block row, a first neighboring $N \times N$ block column, a top $N \times N$ block row set and a left-most $N \times N$ block column set, where the first neighboring $N \times N$ block row is a last row in at least one upper neighboring block that is closest to the top boundary of the current block, the first neighboring $N \times N$ block column is a last column in at least one left neighboring block that is closest to the left boundary of the current block, the top $N \times N$ block row set comprises a first row in the at least one upper neighboring block, and the left-most $N \times N$ block column set comprises a first column in the at least one left neighboring block.

12. A method of video coding with affine motion compensation in a video coding system, comprising:

receiving input data associated with a current block in a current picture at a video encoder or receiving a video bitstream corresponding to compressed data including the current block in the current picture at a video decoder, wherein the current block is coded or to be coded in an affine mode according

to an affine motion model;

retrieving two or more motion vectors from an identical valid neighboring block from a temporal buffer for the current block, wherein the valid neighboring block does not include a neighboring block adjacent to an upper-left corner of the current block, wherein the temporal buffer stores motion vectors of one neighboring NxN block row and one neighboring NxN block column of the current block, and NxN is a block size for storing one motion vector in the temporal buffer;

deriving an affine candidate including affine motion vectors using the retrieved two or more motion vectors of the identical valid neighboring block; and

encoding or decoding the current block by predicting the current block using one or more motion compensated blocks by the derived affine candidate, wherein the affine motion vectors predict a motion vector at a control point of the current block and a corresponding point of the one or more motion compensated blocks.

13. The method of Claim 12, wherein the retrieved two or more motion vectors correspond to two motion vectors, one of said two motion vectors is an original motion vector at an lower-left corner of the valid neighboring block and the other one of said two motion vectors is an original motion vector at an lower-right corner of the valid neighboring block if the valid neighboring block is above the current block.

14. The method of Claim 13, wherein the retrieved two or more motion vectors correspond to two motion vectors, wherein one of said two motion vectors is an original motion vector at an upper-right corner of the valid neighboring block and the other one of said two motion vectors is an original motion vector at an lower-right corner of the valid neighboring block if the valid neighboring block is on the left side of the current block.

15. The method of Claim 12, wherein the current block is predicted by said one or more motion compensated blocks by the affine motion vectors in the affine candidate according to a four-parameter affine motion model with two control points.

16. An apparatus of video coding with affine motion compensation in a video coding system, the apparatus comprising one or more electronic circuits configured for:

receiving input data associated with a current block in a current picture at a video encoder or receiving a video bitstream corresponding to compressed data including the current block in the current picture at a video decoder, wherein the current block is coded or to be coded in an affine mode according

to an affine motion model;

retrieving two or more motion vectors from an identical neighboring block from a temporal buffer for the current block, wherein at least one of the retrieved motion vectors is not corresponding to a sub-block in a first neighboring NxN block row closest to a top boundary of the current block or a first neighboring NxN block column closest to a left boundary of the current block, wherein the temporal buffer stores selective motion vectors less than all motion vectors of previous coded blocks in the current picture, and NxN is a block size for storing one motion vector in the temporal buffer;

deriving an affine candidate including affine motion vectors using the retrieved two or more motion vectors of the identical neighboring block; and

encoding or decoding the current block by predicting the current block using one or more motion compensated blocks by the derived affine candidate, wherein the affine motion vectors predict a motion vector at a control point of the current block and a corresponding point of the one or more motion compensated blocks.

17. An apparatus of video coding with affine motion compensation in a video coding system, the apparatus comprising one or more electronic circuits configured for:

receiving input data associated with a current block in a current picture at a video encoder or receiving a video bitstream corresponding to compressed data including the current block in the current picture at a video decoder, wherein the current block is coded or to be coded in an affine mode according to an affine motion model;

retrieving two or more motion vectors from an identical valid neighboring block from a temporal buffer for the current block, wherein the valid neighboring block does not include a neighboring block adjacent to an upper-left corner of the current block, wherein the temporal buffer stores motion vectors of one neighboring NxN block row and one neighboring NxN block column of the current block, and NxN is a block size for storing one motion vector in the temporal buffer;

deriving an affine candidate including affine motion vectors using the retrieved two or more motion vectors of the identical valid neighboring block; and

encoding or decoding the current block by predicting the current block using one or more motion compensated blocks by the derived affine candidate, wherein the affine motion vectors predict a motion vector at a control point of the current block and a corresponding point of the one or more motion compensated blocks.