CLAIMS

What is claimed is:

1. A video data coding method based on an affine motion model, wherein the method is applied to a video data coding device, and the method comprises:

obtaining one spatial reference block of a to-be-processed picture block;

determining a plurality of preset subblock locations of the spatial reference block;

obtaining motion vectors corresponding to preset pixel locations of the to-be-processed picture block that are extrapolated from motion vectors corresponding to the preset subblock locations of the spatial reference block;

obtaining motion vectors corresponding to a plurality of subblock locations of the to-be-processed picture block that are interpolated from the motion vectors corresponding to the preset pixel locations of the to-be-processed picture block;

performing motion compensation for a plurality of subblocks of the to-be-processed picture block based on the motion vectors corresponding to the plurality of subblock locations of the to-be-processed picture block, to obtain predicted pixel values of the plurality of subblocks of the to-be-processed picture block; and

wherein the affine motion model is one of the following (a), (b) or (c):

(a) a 4-parameter affine motion model, and the plurality of preset subblock locations comprise a first preset location (x4 + M/2, y4 + N/2) and a second preset location (x4 + M/2 + P, y4 + N/2), wherein x4 is a horizontal coordinate of a top-left pixel of the spatial reference block, y4 is a vertical coordinate of the top-left pixel of the spatial reference block, M is a subblock width, N is a subblock height, P is 2 raised to the power of K, K is a nonnegative integer, K is less than U, and U is a width of the spatial reference block;

(b) a 4-parameter affine motion model, and the plurality of preset subblock locations comprise a first preset location (x4 + M/2, y4 + N/2) and a third preset location (x4 + M/2, y4 + N/2 + Q), wherein x4 is a horizontal coordinate of a top-left pixel of the spatial reference block, y4 is a vertical coordinate of the top-left pixel of the spatial reference block, M is a subblock width, N is a subblock height, Q is 2 raised to the power of R, R is a nonnegative integer, Q is less than V, and V is a height of the spatial reference block; or

(c) a 6-parameter affine motion model, and the plurality of preset subblock locations comprise a first preset location (x4 + M/2, y4 + N/2), a second preset location (x4 + M/2 + P, y4 + N/2), and a third preset location (x4 + M/2, y4 + N/2 + Q), wherein x4 is a horizontal coordinate of a top-left pixel of the spatial reference block, y4 is a vertical coordinate of the top-left pixel of the spatial reference block, M is a subblock width, N is a subblock height, P is 2 raised to the power of K, Q is 2 raised to the power of R, K and R are nonnegative integers, P is less than U, Q is less than V, U is a width of the spatial reference block, and V is a height of the spatial reference block.

2. The method according to claim 1, wherein the subblock location of the spatial reference block or the to-be-processed picture block is:

a location of a top-left pixel in a subblock;

a location of a geometric center of a subblock; or

a location of a pixel closest to a geometric center in a subblock.

3. The method according to claim 1, wherein a distance between two of the plurality of preset subblock locations is S, wherein S is 2 raised to the power of K, and K is a nonnegative integer.

4. The method according to claim 1, wherein the affine motion model corresponds to 4-parameter affine motion model (a).

5. The method according to claim 1, wherein the affine motion model corresponds to 4-parameter affine motion model (b).

6. The method according to claim 4, wherein the preset pixel locations comprise at least two of a top-left pixel location of the to-be-processed picture block, a top-right pixel location of the to-be-processed picture block, and a bottom-left pixel location of the to-be-processed picture block, and

wherein the obtaining the motion vectors corresponding to the preset pixel locations of the to-be-processed picture block comprises: obtaining, the motion vectors corresponding to the preset pixel locations of the to-be-processed picture block, through the following:

$$\begin{cases} vx_0 = vx_4 + \frac{(vx_5 - vx_4)}{P} \times (x_0 - x_4 - M/2) - \frac{(vy_5 - vy_4)}{P} \times (y_0 - y_4 - N/2) \\ vy_0 = vy_4 + \frac{(vy_5 - vy_4)}{P} \times (x_0 - x_4 - M/2) + \frac{(vx_5 - vx_4)}{P} \times (y_0 - y_4 - N/2) \end{cases};$$

$$\begin{cases} vx_1 = vx_4 + \frac{(vx_5 - vx_4)}{P} \times (x_1 - x_4 - M/2) - \frac{(vy_5 - vy_4)}{P} \times (y_1 - y_4 - N/2) \\ vy_1 = vy_4 + \frac{(vy_5 - vy_4)}{P} \times (x_1 - x_4 - M/2) + \frac{(vx_5 - vx_4)}{P} \times (y_1 - y_4 - N/2) \end{cases}; \text{ and}$$

$$\begin{cases} vx_2 = vx_4 + \frac{(vx_5 - vx_4)}{P} \times (x_2 - x_4 - M/2) - \frac{(vy_5 - vy_4)}{P} \times (y_2 - y_4 - N/2) \\ vy_2 = vy_4 + \frac{(vy_5 - vy_4)}{P} \times (x_2 - x_4 - M/2) + \frac{(vx_5 - vx_4)}{P} \times (y_2 - y_4 - N/2) \end{cases},$$

wherein

vx_0 is a horizontal component of a motion vector corresponding to the top-left pixel location of the to-be-processed picture block,

vy_0 is a vertical component of the motion vector corresponding to the top-left pixel location of the to-be-processed picture block,

vx_1 is a horizontal component of a motion vector corresponding to the top-right pixel location of the to-be-processed picture block,

vy_1 is a vertical component of the motion vector corresponding to the top-right pixel location of the to-be-processed picture block,

vx_2 is a horizontal component of a motion vector corresponding to the bottom-left pixel location of the to-be-processed picture block,

vy_2 is a vertical component of the motion vector corresponding to the bottom-left pixel location of the to-be-processed picture block,

vx_4 is a horizontal component of a motion vector corresponding to the first preset location,

vy_4 is a vertical component of the motion vector corresponding to the first preset location,

vx_5 is a horizontal component of a motion vector corresponding to the second preset location,

vy_5 is a vertical component of the motion vector corresponding to the second preset location,

x_0 is a horizontal coordinate of the top-left pixel location of the to-be-processed picture block,

y_0 is a vertical coordinate of the top-left pixel location of the to-be-processed picture block,

x_1 is a horizontal coordinate of the top-right pixel location of the to-be-processed picture block,

y_1 is a vertical coordinate of the top-right pixel location of the to-be-processed picture block,

x_2 is a horizontal coordinate of the bottom-left pixel location of the to-be-processed picture block, and

y_2 is a vertical coordinate of the bottom-left pixel location of the to-be-processed picture block.

7. The method according to claim 6, wherein the preset pixel locations comprise the top-left pixel

location of the to-be-processed picture block and the top-right pixel location of the to-be-processed picture block, and

wherein the obtaining the motion vectors corresponding to a plurality of subblock locations of the to-be-processed picture block comprises: obtaining, the motion vectors corresponding to the plurality of subblock locations of the to-be-processed picture block, through the following:

$$\begin{cases} vx = \frac{vx_1 - vx_0}{W} x - \frac{vy_1 - vy_0}{W} y + vx_0 \\ vy = \frac{vy_1 - vy_0}{W} x + \frac{vx_1 - vx_0}{W} y + vy_0 \end{cases}, \text{ wherein}$$

W is a width of the to-be-processed picture block, vx is a horizontal component of a motion vector corresponding to (x, y) in the plurality of subblock locations, and vy is a vertical component of the motion vector corresponding to (x, y) in the plurality of subblock locations.

8. The method according to claim 1, wherein the affine motion model corresponds to the 6-parameter affine motion model (c).

9. The method according to claim 8, wherein the preset pixel locations comprise a top-left pixel location of the to-be-processed picture block, a top-right pixel location of the to-be-processed picture block, and a bottom-left pixel location of the to-be-processed picture block, and

wherein the obtaining the motion vectors corresponding to preset pixel locations of the to-be-processed picture block comprises: obtaining, the motion vectors corresponding to the preset pixel locations of the to-be-processed picture block, through the following:

$$\begin{cases} vx_0 = vx_4 + \frac{(vx_5 - vx_4)}{P} \times (x_0 - x_4 - M/2) + \frac{(vx_6 - vx_4)}{Q} \times (y_0 - y_4 - N/2) \\ vy_0 = vy_4 + \frac{(vy_5 - vy_4)}{P} \times (x_0 - x_4 - M/2) + \frac{(vy_6 - vy_4)}{Q} \times (y_0 - y_4 - N/2) \end{cases};$$

$$\begin{cases} vx_1 = vx_4 + \frac{(vx_5 - vx_4)}{P} \times (x_1 - x_4 - M/2) + \frac{(vx_6 - vx_4)}{Q} \times (y_1 - y_4 - N/2) \\ vy_1 = vy_4 + \frac{(vy_5 - vy_4)}{P} \times (x_1 - x_4 - M/2) + \frac{(vy_6 - vy_4)}{Q} \times (y_1 - y_4 - N/2) \end{cases}; \text{ and}$$

$$\begin{cases} vx_2 = vx_4 + \frac{(vx_5 - vx_4)}{P} \times (x_2 - x_4 - M/2) + \frac{(vx_6 - vx_4)}{Q} \times (y_2 - y_4 - N/2) \\ vy_2 = vy_4 + \frac{(vy_5 - vy_4)}{P} \times (x_2 - x_4 - M/2) + \frac{(vy_6 - vy_4)}{Q} \times (y_2 - y_4 - N/2) \end{cases},$$

Wherein

vx_0 is a horizontal component of a motion vector corresponding to the top-left pixel location of the to-be-processed picture block,

vy_0 is a vertical component of the motion vector corresponding to the top-left pixel location of the to-be-processed picture block,

vx_1 is a horizontal component of a motion vector corresponding to the top-right pixel location of the to-be-processed picture block,

vy_1 is a vertical component of the motion vector corresponding to the top-right pixel location of the to-be-processed picture block,

vx_2 is a horizontal component of a motion vector corresponding to the bottom-left pixel location of the to-be-processed picture block,

vy_2 is a vertical component of the motion vector corresponding to the bottom-left pixel location of the to-be-processed picture block,

vx_4 is a horizontal component of a motion vector corresponding to the first preset location,

vy_4 is a vertical component of the motion vector corresponding to the first preset location,

vx_5 is a horizontal component of a motion vector corresponding to the second preset location,

vy_5 is a vertical component of the motion vector corresponding to the second preset location,
vx_6 is a horizontal component of a motion vector corresponding to the third preset location,
vy_6 is a vertical component of the motion vector corresponding to the third preset location,
x_0 is a horizontal coordinate of the top-left pixel location of the to-be-processed picture block,
y_0 is a vertical coordinate of the top-left pixel location of the to-be-processed picture block,
x_1 is a horizontal coordinate of the top-right pixel location of the to-be-processed picture block,
y_1 is a vertical coordinate of the top-right pixel location of the to-be-processed picture block,
x_2 is a horizontal coordinate of the bottom-left pixel location of the to-be-processed picture block, and
y_2 is a vertical coordinate of the bottom-left pixel location of the to-be-processed picture block.

10. The method according to claim 9, wherein the obtaining the motion vectors corresponding to the plurality of subblock locations of the to-be-processed picture block comprises:

obtaining, the motion vectors corresponding to the plurality of subblock locations of the to-be-processed picture block, through the following:

$$\begin{cases} vx = \frac{vx_1 - vx_0}{W}x + \frac{vx_2 - vy_0}{H}y + vx_0 \\ vy = \frac{vy_1 - vy_0}{W}x + \frac{vy_2 - vx_0}{H}y + vy_0 \end{cases}$$, wherein

W is a width of the to-be-processed picture block, H is a height of the to-be-processed picture block, vx is a horizontal component of a motion vector corresponding to (x, y) in the plurality of subblock locations, and vy is a vertical component of the motion vector corresponding to (x, y) in the plurality of subblock locations.

11. The method according to claim 1, wherein in response to a top boundary of the to-be-processed picture block coinciding with a top boundary of a coding tree unit (CTU) comprising the to-be-processed picture block, and the spatial reference block is directly above the to-be-processed picture block, on the top-left of the to-be-processed picture block, or on the top-right of the to-be-processed picture block, at least two of subblocks corresponding to the plurality of preset subblock locations are adjacent to the top boundary of the to-be-processed picture block.

12. The method according to claim 1, wherein in response to a left boundary of the to-be-processed picture block coinciding with a left boundary of a coding tree unit (CTU) comprising the to-be-processed picture block, and the spatial reference block is directly on the left of the to-be-processed picture block, on the top-left of the to-be-processed picture block, or on the bottom-left of the to-be-processed picture block, at least two of subblocks corresponding to the plurality of preset subblock locations are adjacent to the left boundary of the to-be-processed picture block.

13. A video data coding device comprising:

a non-transitory memory storage, configured to store video data in a form of a bitstream; and

a video coder coupled to the memory storage, and configured for:

obtaining one spatial reference block of a to-be-processed picture block in the video data;

determining a plurality of preset subblock locations of the spatial reference block;

obtaining motion vectors corresponding to preset pixel locations of the to-be-processed picture block that are extrapolated from motion vectors corresponding to the preset subblock locations of the spatial reference block;

obtaining motion vectors corresponding to a plurality of subblock locations of the to-be-processed picture block that are interpolated from the motion vectors corresponding to the preset pixel locations of the to-

be-processed picture block;

performing motion compensation for a plurality of subblocks of the to-be-processed picture block based on the motion vectors corresponding to the plurality of subblock locations of the to-be-processed picture block, to obtain predicted pixel values of the plurality of subblocks of the to-be-processed picture block; and

wherein the affine motion model is one of the following (a), (b) or (c):

(a) a 4-parameter affine motion model, and the plurality of preset subblock locations comprise a first preset location (x4 + M/2, y4 + N/2) and a second preset location (x4 + M/2 + P, y4 + N/2), wherein x4 is a horizontal coordinate of a top-left pixel of the spatial reference block, y4 is a vertical coordinate of the top-left pixel of the spatial reference block, M is a subblock width, N is a subblock height, P is 2 raised to the power of K, K is a nonnegative integer, K is less than U, and U is a width of the spatial reference block;

(b) a 4-parameter affine motion model, and the plurality of preset subblock locations comprise a first preset location (x4 + M/2, y4 + N/2) and a third preset location (x4 + M/2, y4 + N/2 + Q), wherein x4 is a horizontal coordinate of a top-left pixel of the spatial reference block, y4 is a vertical coordinate of the top-left pixel of the spatial reference block, M is a subblock width, N is a subblock height, Q is 2 raised to the power of R, R is a nonnegative integer, Q is less than V, and V is a height of the spatial reference block; or

(c) a 6-parameter affine motion model, and the plurality of preset subblock locations comprise a first preset location (x4 + M/2, y4 + N/2), a second preset location (x4 + M/2 + P, y4 + N/2), and a third preset location (x4 + M/2, y4 + N/2 + Q), wherein x4 is a horizontal coordinate of a top-left pixel of the spatial reference block, y4 is a vertical coordinate of the top-left pixel of the spatial reference block, M is a subblock width, N is a subblock height, P is 2 raised to the power of K, Q is 2 raised to the power of R, K and R are nonnegative integers, P is less than U, Q is less than V, U is a width of the spatial reference block, and V is a height of the spatial reference block.

14. The device according to claim 13, wherein the subblock location of the spatial reference block or the to-be-processed picture block is:

a location of a top-left pixel in a subblock;

a location of a geometric center of a subblock; or

a location of a pixel closest to a geometric center in a subblock.

15. The device according to claim 13, wherein a distance between two of the plurality of preset subblock locations is S, wherein S is 2 raised to the power of K, and K is a nonnegative integer.

16. The device according to claim 13, wherein the affine motion model corresponds to 4-parameter affine motion model (a).

17. The device according to claim 13, wherein the affine motion model corresponds to 4-parameter affine motion model (b).

18. The device according to claim 16, wherein the preset pixel locations comprise at least two of a top-left pixel location of the to-be-processed picture block, a top-right pixel location of the to-be-processed picture block, and a bottom-left pixel location of the to-be-processed picture block, and

wherein the obtaining the motion vectors corresponding to the preset pixel locations of the to-be-processed picture block comprises: obtaining, the motion vectors corresponding to the preset pixel locations of the to-be-processed picture block, through the following:

$$\begin{cases} vx_0 = vx_4 + \frac{(vx_5 - vx_4)}{P} \times (x_0 - x_4 - M/2) - \frac{(vy_5 - vy_4)}{P} \times (y_0 - y_4 - N/2) \\ vy_0 = vy_4 + \frac{(vy_5 - vy_4)}{P} \times (x_0 - x_4 - M/2) + \frac{(vx_5 - vx_4)}{P} \times (y_0 - y_4 - N/2) \end{cases};$$

$$\begin{cases} vx_1 = vx_4 + \frac{(vx_5 - vx_4)}{P} \times (x_1 - x_4 - M/2) - \frac{(vy_5 - vy_4)}{P} \times \left(y_1 - y_4 - N/2\right) \\ vy_1 = vy_4 + \frac{(vy_5 - vy_4)}{P} \times (x_1 - x_4 - M/2) + \frac{(vx_5 - vx_4)}{P} \times \left(y_1 - y_4 - N/2\right) \end{cases}; \text{ and}$$

$$\begin{cases} vx_2 = vx_4 + \frac{(vx_5 - vx_4)}{P} \times (x_2 - x_4 - M/2) - \frac{(vy_5 - vy_4)}{P} \times \left(y_2 - y_4 - N/2\right) \\ vy_2 = vy_4 + \frac{(vy_5 - vy_4)}{P} \times (x_2 - x_4 - M/2) + \frac{(vx_5 - vx_4)}{P} \times \left(y_2 - y_4 - N/2\right) \end{cases},$$

wherein

vx_0 is a horizontal component of a motion vector corresponding to the top-left pixel location of the to-be-processed picture block,

vy_0 is a vertical component of the motion vector corresponding to the top-left pixel location of the to-be-processed picture block,

vx_1 is a horizontal component of a motion vector corresponding to the top-right pixel location of the to-be-processed picture block,

vy_1 is a vertical component of the motion vector corresponding to the top-right pixel location of the to-be-processed picture block,

vx_2 is a horizontal component of a motion vector corresponding to the bottom-left pixel location of the to-be-processed picture block,

vy_2 is a vertical component of the motion vector corresponding to the bottom-left pixel location of the to-be-processed picture block,

vx_4 is a horizontal component of a motion vector corresponding to the first preset location,

vy_4 is a vertical component of the motion vector corresponding to the first preset location,

vx_5 is a horizontal component of a motion vector corresponding to the second preset location,

vy_5 is a vertical component of the motion vector corresponding to the second preset location,

x_0 is a horizontal coordinate of the top-left pixel location of the to-be-processed picture block,

y_0 is a vertical coordinate of the top-left pixel location of the to-be-processed picture block,

x_1 is a horizontal coordinate of the top-right pixel location of the to-be-processed picture block,

y_1 is a vertical coordinate of the top-right pixel location of the to-be-processed picture block,

x_2 is a horizontal coordinate of the bottom-left pixel location of the to-be-processed picture block, and

y_2 is a vertical coordinate of the bottom-left pixel location of the to-be-processed picture block.

19. The device according to claim 18, wherein the preset pixel locations comprise the top-left pixel location of the to-be-processed picture block and the top-right pixel location of the to-be-processed picture block, and

wherein the obtaining the motion vectors corresponding to the plurality of subblock locations of the to-be-processed picture block comprises:

obtaining, the motion vectors corresponding to the plurality of subblock locations of the to-be-processed picture block, through the following:

$$\begin{cases} vx = \frac{vx_1 - vx_0}{W} x - \frac{vy_1 - vy_0}{W} y + vx_0 \\ vy = \frac{vy_1 - vy_0}{W} x + \frac{vx_1 - vx_0}{W} y + vy_0 \end{cases}, \text{ wherein}$$

W is a width of the to-be-processed picture block, vx is a horizontal component of a motion vector

corresponding to (x, y) in the plurality of subblock locations, and vy is a vertical component of the motion vector corresponding to (x, y) in the plurality of subblock locations.

20. The device according to claim 13, wherein the affine motion model corresponds to 6-parameter affine motion model (c).

21. The device according to claim 20, wherein the preset pixel locations comprise a top-left pixel location of the to-be-processed picture block, a top-right pixel location of the to-be-processed picture block, and a bottom-left pixel location of the to-be-processed picture block, and

wherein the obtaining the motion vectors corresponding to the preset pixel locations of the to-be-processed picture block comprises: obtaining, the motion vectors corresponding to the preset pixel locations of the to-be-processed picture block, through the following:

$$\begin{cases} vx_0 = vx_4 + \frac{(vx_5 - vx_4)}{P} \times (x_0 - x_4 - M/2) + \frac{(vx_6 - vx_4)}{Q} \times (y_0 - y_4 - N/2) \\ vy_0 = vy_4 + \frac{(vy_5 - vy_4)}{P} \times (x_0 - x_4 - M/2) + \frac{(vy_6 - vy_4)}{Q} \times (y_0 - y_4 - N/2) \end{cases};$$

$$\begin{cases} vx_1 = vx_4 + \frac{(vx_5 - vx_4)}{P} \times (x_1 - x_4 - M/2) + \frac{(vx_6 - vx_4)}{Q} \times (y_1 - y_4 - N/2) \\ vy_1 = vy_4 + \frac{(vy_5 - vy_4)}{P} \times (x_1 - x_4 - M/2) + \frac{(vy_6 - vy_4)}{Q} \times (y_1 - y_4 - N/2) \end{cases}; \text{ and}$$

$$\begin{cases} vx_2 = vx_4 + \frac{(vx_5 - vx_4)}{P} \times (x_2 - x_4 - M/2) + \frac{(vx_6 - vx_4)}{Q} \times (y_2 - y_4 - N/2) \\ vy_2 = vy_4 + \frac{(vy_5 - vy_4)}{P} \times (x_2 - x_4 - M/2) + \frac{(vy_6 - vy_4)}{Q} \times (y_2 - y_4 - N/2) \end{cases},$$

wherein vx_0 is a horizontal component of a motion vector corresponding to the top-left pixel location of the to-be-processed picture block,

vy_0 is a vertical component of the motion vector corresponding to the top-left pixel location of the to-be-processed picture block,

vx_1 is a horizontal component of a motion vector corresponding to the top-right pixel location of the to-be-processed picture block,

vy_1 is a vertical component of the motion vector corresponding to the top-right pixel location of the to-be-processed picture block,

vx_2 is a horizontal component of a motion vector corresponding to the bottom-left pixel location of the to-be-processed picture block,

vy_2 is a vertical component of the motion vector corresponding to the bottom-left pixel location of the to-be-processed picture block,

vx_4 is a horizontal component of a motion vector corresponding to the first preset location,

vy_4 is a vertical component of the motion vector corresponding to the first preset location,

vx_5 is a horizontal component of a motion vector corresponding to the second preset location,

vy_5 is a vertical component of the motion vector corresponding to the second preset location,

vx_6 is a horizontal component of a motion vector corresponding to the third preset location,

vy_6 is a vertical component of the motion vector corresponding to the third preset location,

x_0 is a horizontal coordinate of the top-left pixel location of the to-be-processed picture block,

y_0 is a vertical coordinate of the top-left pixel location of the to-be-processed picture block,

x_1 is a horizontal coordinate of the top-right pixel location of the to-be-processed picture block,

y_1 is a vertical coordinate of the top-right pixel location of the to-be-processed picture block,

x_2 is a horizontal coordinate of the bottom-left pixel location of the to-be-processed picture block, and

y_2 is a vertical coordinate of the bottom-left pixel location of the to-be-processed picture block.

22. The device according to claim 21, wherein the video coder is configured for obtaining, the motion vectors corresponding to the plurality of subblock locations of the to-be-processed picture block, through the following:

$$\begin{cases} vx = \frac{vx_1 - vx_0}{W} x + \frac{vx_2 - vy_0}{H} y + vx_0 \\ vy = \frac{vy_1 - vy_0}{W} x + \frac{vy_2 - vx_0}{H} y + vy_0 \end{cases}$$, wherein

W is a width of the to-be-processed picture block, H is a height of the to-be-processed picture block, vx is a horizontal component of a motion vector corresponding to (x, y) in the plurality of subblock locations, and vy is a vertical component of the motion vector corresponding to (x, y) in the plurality of subblock locations.

23. The device according to claim 13, wherein in response to a top boundary of the to-be-processed picture block coinciding with a top boundary of a coding tree unit CTU comprising the to-be-processed picture block, and the spatial reference block is directly above the to-be-processed picture block, on the top-left of the to-be-processed picture block, or on the top-right of the to-be-processed picture block, at least two of subblocks corresponding to the plurality of preset subblock locations are adjacent to the top boundary of the to-be-processed picture block.

24. The device according to claim 13, wherein in response to a left boundary of the to-be-processed picture block coinciding with a left boundary of a coding tree unit CTU comprising the to-be-processed picture block, and the spatial reference block is directly on the left of the to-be-processed picture block, on the top-left of the to-be-processed picture block, or on the bottom-left of the to-be-processed picture block, at least two of subblocks corresponding to the plurality of preset subblock locations are adjacent to the left boundary of the to-be-processed picture block.

25. A non-transitory computer-readable medium having processor-executable instructions stored thereon which, when executed by a processor of a computer device, causes the computer device to perform operations including:

obtaining one spatial reference block of a to-be-processed picture block in the video data;

determining a plurality of preset subblock locations of the spatial reference block;

obtaining motion vectors corresponding to preset pixel locations of the to-be-processed picture block that are extrapolated from motion vectors corresponding to the preset subblock locations of the spatial reference block;

obtaining motion vectors corresponding to a plurality of subblock locations of the to-be-processed picture block that are interpolated from the motion vectors corresponding to the preset pixel locations of the to-be-processed picture block;

performing motion compensation for a plurality of subblocks of the to-be-processed picture block based on the motion vectors corresponding to the plurality of subblock locations of the to-be-processed picture block, to obtain predicted pixel values of the plurality of subblocks of the to-be-processed picture block; and

wherein the affine motion model is one of the following (a), (b) or (c):

(a) a 4-parameter affine motion model, and the plurality of preset subblock locations comprise a first preset location (x4 + M/2, y4 + N/2) and a second preset location (x4 + M/2 + P, y4 + N/2), wherein x4 is a horizontal coordinate of a top-left pixel of the spatial reference block, y4 is a vertical coordinate of the top-left pixel of the spatial reference block, M is a subblock width, N is a subblock height, P is 2 raised to the power of K, K is a nonnegative integer, K is less than U, and U is a width of the spatial reference block;

(b) a 4-parameter affine motion model, and the plurality of preset subblock locations comprise a first

preset location (x4 + M/2, y4 + N/2) and a third preset location (x4 + M/2, y4 + N/2 + Q), wherein x4 is a horizontal coordinate of a top-left pixel of the spatial reference block, y4 is a vertical coordinate of the top-left pixel of the spatial reference block, M is a subblock width, N is a subblock height, Q is 2 raised to the power of R, R is a nonnegative integer, Q is less than V, and V is a height of the spatial reference block; or

(c) a 6-parameter affine motion model, and the plurality of preset subblock locations comprise a first preset location (x4 + M/2, y4 + N/2), a second preset location (x4 + M/2 + P, y4 + N/2), and a third preset location (x4 + M/2, y4 + N/2 + Q), wherein x4 is a horizontal coordinate of a top-left pixel of the spatial reference block, y4 is a vertical coordinate of the top-left pixel of the spatial reference block, M is a subblock width, N is a subblock height, P is 2 raised to the power of K, Q is 2 raised to the power of R, K and R are nonnegative integers, P is less than U, Q is less than V, U is a width of the spatial reference block, and V is a height of the spatial reference block.