decoder 202 parses the first motion information and the second motion information.

[0154] In a fourth implementation, the video decoder 202 parses a fourth identifier (For example, mv_derived_flag_l0). When a value of the fourth identifier is a fourth preset value, the video decoder 202 determines to calculate motion information of the current picture block by using a motion information derivation algorithm, and calculates a variable derived_ref_num based on a first reference frame list and a second reference frame list. The variable represents a quantity of mirrored/linear reference frame pairs that can be constituted by a first reference frame and a second reference frame. When the quantity of reference frame pairs is 1, the video decoder 202 directly determines reference frame index values. Then, the video decoder 202 determines, based on a preset derived direction, to parse the first motion information, and determines the second motion information based on the first motion information. In other words, the video decoder 202 obtains the indication information. The first reference frame list is a reference frame list of the current picture block in the first direction, the second reference frame list is a reference frame list of the current picture block in the second direction, the first reference frame is a reference frame of the current picture block in the first direction, and the second reference frame is a reference frame of the current picture block in the second direction. A reference frame index value in this embodiment of this application is a number of a reference frame in a corresponding reference frame list.

[0155] For example, a sequence number of the current frame is 4, the first reference frame list is {2, 0}, the second reference frame list is {6, 7}, and it is determined, based on the following condition B or condition C, that a reference frame whose sequence number is 2 in the first reference frame list and a reference frame whose sequence number is 6 in the second reference frame list can constitute a reference frame pair. In this case, both an index value of the first reference frame and an index value of the second reference frame are 0.

[0156] For example, the sequence number of the current frame is 4, the first reference frame list is {2, 0}, the second reference frame list is {6, 7}, and it is determined, based on the following condition B or condition C, that the reference frame

whose sequence number is 2 in the first reference frame list and the reference frame whose sequence number is 6 in the second reference frame list can constitute the reference frame pair, and that a reference frame whose sequence number is 0 in the first reference frame list and a reference frame whose sequence number is 7 in the second reference frame list also can constitute a reference frame pair. In this case, the video decoder 202 needs to parse the reference frame index value.

[0157] Further, when determining that the inter prediction mode is the bidirectional inter prediction mode, the video decoder 202 may further determine whether feature information of the current frame satisfies a preset condition. In this way, when the feature information of the current frame satisfies the preset condition, the video decoder 202 obtains the indication information. To be specific, a process of S401 may specifically be: The video decoder 202 obtains the indication information when determining that the inter prediction mode is the bidirectional inter prediction mode and that the feature information of the current frame satisfies a first preset condition.

[0158] The feature information of the current frame includes at least one of a sequence number, a temporal level ID (Temporal Level ID, TID), or a quantity of reference frames. The bitstream obtained by the video decoder 202 includes a sequence parameter set (Sequence Parameter Set, SPS), a picture parameter set (Picture Parameter Set, PPS), a slice header (slice header) or a slice segment header (slice segment header), and encoded picture data. Then, the video decoder 202 parses the bitstream to obtain the feature information of the current frame.

[0159] The preset condition includes at least one of the following conditions:

[0160] Condition A: The current picture block has at least two reference frames.

[0161] Condition B: The sequence number of the current frame, a sequence number of the first reference frame, and a sequence number of the second reference frame satisfies the following formula:

$$\mathrm{POC_Cur} - \mathrm{POC_listX} = \mathrm{POC_listY} - \mathrm{POC_Cur}$$

[0162] In the foregoing formula, $\mathrm{POC_Cur}$ represents the sequence number of the current frame, $\mathrm{POC_listX}$ represents the sequence number of the first reference frame, $\mathrm{POC_listY}$ represents the sequence number of the second reference frame, the first

CLAIMS

What is claimed is:

1. A bidirectional inter prediction method, comprising:

obtaining indication information;

obtaining first motion information;

when the indication information is used to indicate to determine second motion information based on the first motion information, determining the second motion information based on the first motion information, wherein the first motion information is motion information of a current picture block in a first direction, and the second motion information is motion information of the current picture block in a second direction; and

determining prediction samples of the current picture block based on the first motion information and the second motion information.

2. The method according to claim 1, wherein the determining the second motion information based on the first motion information specifically comprises:

obtaining an index value of a first reference frame in the first motion information, and determining a sequence number of the first reference frame based on the index value of the first reference frame and a first reference frame list, wherein the first reference frame is a reference frame of the current picture block in the first direction, and the index value of the first reference frame is a number of the first reference frame in the first reference frame list;

obtaining an index value of a second reference frame, and determining a sequence number of the second reference frame based on the index value of the second reference frame and a second reference frame list, wherein the second reference frame is a reference frame of the current picture block in the second direction, and the index value of the second reference frame is a number of the second reference frame in the second reference frame list;

determining a first motion vector based on a first motion vector difference and a

first motion vector predictor flag that are in the first motion information, wherein the first motion vector is a motion vector of the current picture block in the first direction; and

deriving a second motion vector in the second motion information according to the following formula:

$$\text{mv_lY} = \frac{\text{POC_Cur} - \text{POC_listY}}{\text{POC_Cur} - \text{POC_listX}} \times \text{mv_lX}$$

wherein mv_lY represents the second motion vector, POC_Cur represents a sequence number of a current frame, POC_listX represents the sequence number of the first reference frame, POC_listY represents the sequence number of the second reference frame, mv_lX represents the first motion vector, and the second motion vector is a motion vector of the current picture block in the second direction.

3. The method according to claim 1, wherein the determining the second motion information based on the first motion information specifically comprises:

obtaining an index value of a first reference frame in the first motion information, wherein the first reference frame is a reference frame of the current picture block in the first direction, and the index value of the first reference frame is a number of the first reference frame in a first reference frame list;

obtaining an index value of a second reference frame, wherein the second reference frame is a reference frame of the current picture block in the second direction, and the index value of the second reference frame is a number of the second reference frame in a second reference frame list;

determining a first motion vector based on a first motion vector difference and a first motion vector predictor flag that are in the first motion information, wherein the first motion vector is a motion vector of the current picture block in the first direction; and

when the first reference frame is a forward reference frame of the current picture block and the second reference frame is a backward reference frame of the current picture block, or when the first reference frame is a backward reference frame of the current picture block and the second reference frame is a forward reference frame of

the current picture block, or when the first reference frame and the second reference frame each are a forward reference frame of the current picture block, or when the first reference frame and the second reference frame each are a backward reference frame of the current picture block, deriving a second motion vector in the second motion information according to the following formula:

$$mv_lY = -mv_lX$$

wherein mv_lY represents the second motion vector, mv_lX represents the first motion vector, and the second motion vector is a motion vector of the current picture block in the second direction.

4. The method according to claim 1, wherein the determining the second motion information based on the first motion information specifically comprises:

obtaining an index value of a first reference frame and a first motion vector difference that are in the first motion information, and determining a sequence number of the first reference frame based on the index value of the first reference frame and a first reference frame list, wherein the first reference frame is a reference frame of the current picture block in the first direction, and the index value of the first reference frame is a number of the first reference frame in the first reference frame list;

obtaining an index value of a second reference frame, determining a sequence number of the second reference frame based on the index value of the second reference frame and a second reference frame list, and determining a second predicted motion vector based on the index value of the second reference frame and a second candidate predicted motion vector list, wherein the second predicted motion vector is a predicted motion vector of the current picture block in the second direction, the second reference frame is a reference frame of the current picture block in the second direction, and the index value of the second reference frame is a number of the second reference frame in the second reference frame list;

calculating a second motion vector difference in the second motion information according to the following formula:

$$mvd_lY = \frac{POC_Cur - POC_listY}{POC_Cur - POC_listX} \times mvd_lX$$

wherein mvd_lY represents the second motion vector difference, POC_Cur represents a sequence number of a current frame, POC_listX represents the sequence number of the first reference frame, POC_listY represents the sequence number of the second reference frame, and mvd_lX represents the first motion vector difference; and

determining a second motion vector based on the second predicted motion vector and the second motion vector difference, wherein the second motion vector is a motion vector of the current picture block in the second direction.

5. The method according to claim 1, wherein the determining the second motion information based on the first motion information specifically comprises:

obtaining an index value of a first reference frame and a first motion vector that are in the first motion information, wherein the first reference frame is a reference frame of the current picture block in the first direction, and the index value of the first reference frame is a number of the first reference frame in a first reference frame list;

obtaining an index value of a second reference frame, and determining a second predicted motion vector based on the index value of the second reference frame and a second candidate predicted motion vector list, wherein the second predicted motion vector is a predicted motion vector of the current picture block in the second direction, the second reference frame is a reference frame of the current picture block in the second direction, and the index value of the second reference frame is a number of the second reference frame in a second reference frame list;

when the first reference frame is a forward reference frame of the current picture block and the second reference frame is a backward reference frame of the current picture block, or when the first reference frame is a backward reference frame of the current picture block and the second reference frame is a forward reference frame of the current picture block, or when the first reference frame and the second reference frame each are a forward reference frame of the current picture block, or when the first reference frame and the second reference frame each are a backward reference frame of the current picture block, calculating a second motion vector difference in the second motion information according to the following formula:

$$mvd_lY = -mvd_lX$$

wherein mvd_lY represents the second motion vector difference, and mvd_lX represents a first motion vector difference; and

determining a second motion vector based on the second predicted motion vector and the second motion vector difference, wherein the second motion vector is a motion vector of the current picture block in the second direction.

6. The method according to any one of claims 2 to 5, wherein the obtaining an index value of a second reference frame specifically comprises:

calculating a first sequence number based on the sequence number of the current frame and the sequence number of the first reference frame according to a formula $\mathrm{POC_listY0} = 2 * \mathrm{POC_Cur} - \mathrm{POC_listX}$, wherein $\mathrm{POC_Cur}$ represents the sequence number of the current frame, $\mathrm{POC_listX}$ represents the sequence number of the first reference frame, and $\mathrm{POC_listY0}$ represents the first sequence number; and

when the second reference frame list comprises the first sequence number, determining, as the index value of the second reference frame, a number of a reference frame represented by the first sequence number in the second reference frame list.

7. The method according to any one of claims 2 to 5, wherein the obtaining an index value of a second reference frame specifically comprises:

calculating a second sequence number based on the sequence number of the current frame and the sequence number of the first reference frame according to a formula $(\mathrm{POC_Cur} - \mathrm{POC_listX}) * (\mathrm{POC_listY0'} - \mathrm{POC_Cur}) > 0$, wherein $\mathrm{POC_listY0'}$ represents the second sequence number; and

when the second reference frame list comprises the second sequence number, determining, as the index value of the second reference frame, a number of a reference frame represented by the second sequence number in the second reference frame list.

8. The method according to any one of claims 2 to 5, wherein the obtaining an index value of a second reference frame specifically comprises:

calculating a third sequence number based on the sequence number of the current frame and the sequence number of the first reference frame according to a formula $\mathrm{POC_listX} \neq \mathrm{POC_listY0''}$, wherein $\mathrm{POC_listY0''}$ represents the third sequence number; and

determining, as the index value of the second reference frame, a number of a reference frame represented by the third sequence number in the second reference frame list.

9. A bidirectional inter prediction method, comprising:

parsing a bitstream to obtain a first identifier, wherein the first identifier is used to indicate whether to determine second motion information based on first motion information, the first motion information is motion information of a current picture block in a first direction, and the second motion information is motion information of the current picture block in a second direction; if a value of the first identifier is a first preset value, obtaining the first motion information, and determining the second motion information based on the first motion information; and determining prediction samples of the current picture block based on the first motion information and the second motion information; or

parsing a bitstream to obtain a second identifier, wherein the second identifier is used to indicate whether to calculate motion information of a current picture block by using a motion information derivation algorithm; if a value of the second identifier is a second preset value, obtaining a third identifier, wherein the third identifier is used to indicate whether to determine second motion information based on first motion information, the first motion information is motion information of the current picture block in a first direction, and the second motion information is motion information of the current picture block in a second direction; if a value of the third identifier is a third preset value, obtaining the first motion information, and determining the second motion information based on the first motion information; and determining prediction samples of the current picture block based on the first motion information and the second motion information; or

parsing a bitstream to obtain a second identifier, wherein the second identifier is used to indicate whether to calculate motion information of a current picture block by using a motion information derivation algorithm; if a value of the second identifier is a second preset value, obtaining first motion information, and determining second motion information based on the first motion information, wherein the first motion information

is motion information of the current picture block in a first direction, and the second motion information is motion information of the current picture block in a second direction; and determining prediction samples of the current picture block based on the first motion information and the second motion information; or

parsing a bitstream to obtain a fourth identifier, wherein the fourth identifier is used to indicate whether to calculate motion information of a current picture block by using a motion information derivation algorithm; if a value of the fourth identifier is a fourth preset value, determining an index value of a first reference frame and an index value of a second reference frame based on a first reference frame list and a second reference frame list, wherein the first reference frame list is a reference frame list of the current picture block in a first direction, the second reference frame list is a reference frame list of the current picture block in a second direction, the first reference frame is a reference frame of the current picture block in the first direction, and the second reference frame is a reference frame of the current picture block in the second direction; obtaining a first motion vector difference and a first motion vector predictor flag, and determining second motion information based on first motion information, wherein the first motion information comprises the index value of the first reference frame, the first motion vector difference, and the first motion vector predictor flag, and the second motion information is motion information of the current picture block in the second direction; and determining prediction samples of the current picture block based on the first motion information and the second motion information.

10. A bidirectional inter prediction apparatus, comprising:

an obtaining unit, configured to: obtain indication information, and obtain first motion information; and

a determining unit, configured to: when the indication information is used to indicate to determine second motion information based on the first motion information, determine the second motion information based on the first motion information obtained by the obtaining unit, and determine prediction samples of the current picture block based on the first motion information and the second motion information, wherein the first motion information is motion information of the current picture block in a first

direction, and the second motion information is motion information of the current picture block in a second direction.

11. The apparatus according to claim 10, wherein the determining unit is specifically configured to:

obtain an index value of a first reference frame in the first motion information, and determine a sequence number of the first reference frame based on the index value of the first reference frame and a first reference frame list, wherein the first reference frame is a reference frame of the current picture block in the first direction, and the index value of the first reference frame is a number of the first reference frame in the first reference frame list;

obtain an index value of a second reference frame, and determine a sequence number of the second reference frame based on the index value of the second reference frame and a second reference frame list, wherein the second reference frame is a reference frame of the current picture block in the second direction, and the index value of the second reference frame is a number of the second reference frame in the second reference frame list;

determine a first motion vector based on a first motion vector difference and a first motion vector predictor flag that are in the first motion information, wherein the first motion vector is a motion vector of the current picture block in the first direction; and

derive a second motion vector in the second motion information according to the following formula:

$$\text{mv_lY} = \frac{\text{POC_Cur} - \text{POC_listY}}{\text{POC_Cur} - \text{POC_listX}} \times \text{mv_lX}$$

wherein mv_lY represents the second motion vector, POC_Cur represents a sequence number of a current frame, POC_listX represents the sequence number of the first reference frame, POC_listY represents the sequence number of the second reference frame, mv_lX represents the first motion vector, and the second motion vector is a motion vector of the current picture block in the second direction.

12. The apparatus according to claim 10, wherein the determining unit is specifically configured to:

obtain an index value of a first reference frame in the first motion information, wherein the first reference frame is a reference frame of the current picture block in the first direction, and the index value of the first reference frame is a number of the first reference frame in a first reference frame list;

obtain an index value of a second reference frame, wherein the second reference frame is a reference frame of the current picture block in the second direction, and the index value of the second reference frame is a number of the second reference frame in a second reference frame list;

determine a first motion vector based on a first motion vector difference and a first motion vector predictor flag that are in the first motion information, wherein the first motion vector is a motion vector of the current picture block in the first direction; and

when the first reference frame is a forward reference frame of the current picture block and the second reference frame is a backward reference frame of the current picture block, or when the first reference frame is a backward reference frame of the current picture block and the second reference frame is a forward reference frame of the current picture block, or when the first reference frame and the second reference frame each are a forward reference frame of the current picture block, or when the first reference frame and the second reference frame each are a backward reference frame of the current picture block, calculate a second motion vector in the second motion information according to the following formula:

$$mv_lY = -mv_lX$$

wherein mv_lY represents the second motion vector, mv_lX represents the first motion vector, and the second motion vector is a motion vector of the current picture block in the second direction.

13. The apparatus according to claim 10, wherein the determining unit is specifically configured to:

obtain an index value of a first reference frame and a first motion vector difference that are in the first motion information, and determine a sequence number of the first reference frame based on the index value of the first reference frame and a first reference frame list, wherein the first reference frame is a reference frame of the current

picture block in the first direction, and the index value of the first reference frame is a number of the first reference frame in the first reference frame list;

obtain an index value of a second reference frame, determine a sequence number of the second reference frame based on the index value of the second reference frame and a second reference frame list, and determine a second predicted motion vector based on the index value of the second reference frame and a second candidate predicted motion vector list, wherein the second predicted motion vector is a predicted motion vector of the current picture block in the second direction, the second reference frame is a reference frame of the current picture block in the second direction, and the index value of the second reference frame is a number of the second reference frame in the second reference frame list;

calculate a second motion vector difference in the second motion information according to the following formula:

$$\text{mvd_lY} = \frac{\text{POC_Cur} - \text{POC_listY}}{\text{POC_Cur} - \text{POC_listX}} \times \text{mvd_lX}$$

wherein mvd_lY represents the second motion vector difference, POC_Cur represents a sequence number of a current frame, POC_listX represents the sequence number of the first reference frame, POC_listY represents the sequence number of the second reference frame, and mvd_lX represents the first motion vector difference; and

determine a second motion vector based on the second predicted motion vector and the second motion vector difference, wherein the second motion vector is a motion vector of the current picture block in the second direction.

14. The apparatus according to claim 10, wherein the determining unit is specifically configured to:

obtain an index value of a first reference frame and a first motion vector that are in the first motion information, wherein the first reference frame is a reference frame of the current picture block in the first direction, and the index value of the first reference frame is a number of the first reference frame in a first reference frame list;

obtain an index value of a second reference frame, and determine a second predicted motion vector based on the index value of the second reference frame and a

second candidate predicted motion vector list, wherein the second predicted motion vector is a predicted motion vector of the current picture block in the second direction, the second reference frame is a reference frame of the current picture block in the second direction, and the index value of the second reference frame is a number of the second reference frame in a second reference frame list;

when the first reference frame is a forward reference frame of the current picture block and the second reference frame is a backward reference frame of the current picture block, or when the first reference frame is a backward reference frame of the current picture block and the second reference frame is a forward reference frame of the current picture block, or when the first reference frame and the second reference frame each are a forward reference frame of the current picture block, or when the first reference frame and the second reference frame each are a backward reference frame of the current picture block, calculate a second motion vector difference in the second motion information according to the following formula:

$$mvd_lY = -mvd_lX$$

wherein mvd_lY represents the second motion vector difference, and mvd_lX represents a first motion vector difference; and

determine a second motion vector based on the second predicted motion vector and the second motion vector difference, wherein the second motion vector is a motion vector of the current picture block in the second direction.

15. The apparatus according to any one of claims 11 to 14, wherein the obtaining unit is specifically configured to:

calculate a first sequence number based on the sequence number of the current frame and the sequence number of the first reference frame according to a formula $POC_listY0 = 2 * POC_Cur - POC_listX$, wherein POC_Cur represents the sequence number of the current frame, POC_listX represents the sequence number of the first reference frame, and POC_listY0 represents the first sequence number; and

when the second reference frame list comprises the first sequence number, determine, as the index value of the second reference frame, a number of a reference frame represented by the first sequence number in the second reference frame list.

16. The apparatus according to any one of claims 11 to 14, wherein the obtaining unit is specifically configured to:

calculate a second sequence number based on the sequence number of the current frame and the sequence number of the first reference frame according to a formula $(\mathrm{POC_Cur} - \mathrm{POC_listX}) * (\mathrm{POC_listY0'} - \mathrm{POC_Cur}) > 0$, wherein $\mathrm{POC_listY0'}$ represents the second sequence number; and

when the second reference frame list comprises the second sequence number, determine, as the index value of the second reference frame, a number of a reference frame represented by the second sequence number in the second reference frame list.

17. The apparatus according to any one of claims 11 to 14, wherein the obtaining unit is specifically configured to:

calculate a third sequence number based on the sequence number of the current frame and the sequence number of the first reference frame according to a formula $\mathrm{POC_listX} \neq \mathrm{POC_listY0''}$, wherein $\mathrm{POC_listY0''}$ represents the third sequence number; and

determine, as the index value of the second reference frame, a number of a reference frame represented by the third sequence number in the second reference frame list.

18. A bidirectional inter prediction apparatus, comprising:

an obtaining unit, configured to: parse a bitstream to obtain a first identifier, wherein the first identifier is used to indicate whether to determine second motion information based on first motion information, the first motion information is motion information of a current picture block in a first direction, and the second motion information is motion information of the current picture block in a second direction; and if a value of the first identifier is a first preset value, obtain the first motion information; and a determining unit, configured to: determine the second motion information based on the first motion information obtained by the obtaining unit, and determine prediction samples of the current picture block based on the first motion information and the second motion information; or

an obtaining unit, configured to: parse a bitstream to obtain a second identifier,

wherein the second identifier is used to indicate whether to calculate motion information of a current picture block by using a motion information derivation algorithm; if a value of the second identifier is a second preset value, obtain a third identifier, wherein the third identifier is used to indicate whether to determine second motion information based on first motion information, the first motion information is motion information of the current picture block in a first direction, and the second motion information is motion information of the current picture block in a second direction; and if a value of the third identifier is a third preset value, obtain the first motion information; and a determining unit, configured to: determine the second motion information based on the first motion information obtained by the obtaining unit, and determine prediction samples of the current picture block based on the first motion information and the second motion information; or

an obtaining unit, configured to: parse a bitstream to obtain a second identifier, wherein the second identifier is used to indicate whether to calculate motion information of a current picture block by using a motion information derivation algorithm; and if a value of the second identifier is a second preset value, obtain first motion information; and a determining unit, configured to: determine second motion information based on the first motion information obtained by the obtaining unit, wherein the first motion information is motion information of the current picture block in a first direction, and the second motion information is motion information of the current picture block in a second direction; and determine prediction samples of the current picture block based on the first motion information and the second motion information; or

an obtaining unit, configured to parse a bitstream to obtain a fourth identifier, wherein the fourth identifier is used to indicate whether to calculate motion information of a current picture block by using a motion information derivation algorithm; and a determining unit, configured to: if a value of the fourth identifier obtained by the obtaining unit is a fourth preset value, determine an index value of a first reference frame and an index value of a second reference frame based on a first reference frame list and a second reference frame list, wherein the first reference frame list is a reference

frame list of the current picture block in a first direction, the second reference frame list is a reference frame list of the current picture block in the second direction, the first reference frame is a reference frame of the current picture block in the first direction, the second reference frame is a reference frame of the current picture block in the second direction, the obtaining unit is further configured to obtain a first motion vector difference and a first motion vector predictor flag, and the determining unit is further configured to: determine second motion information based on first motion information, wherein the first motion information comprises the index value of the first reference frame, the first motion vector difference, and the first motion vector predictor flag, and the second motion information is motion information of the current picture block in the second direction; and determine prediction samples of the current picture block based on the first motion information and the second motion information.

19. A terminal, wherein the terminal comprises one or more processors, a memory, and a communications interface; and

the memory and the communications interface are connected to the one or more processors, the terminal communicates with another device through the communications interface, the memory is configured to store computer program code, the computer program code comprises an instruction, and when the one or more processors execute the instruction, the terminal performs the bidirectional inter prediction method according to any one of claims 1 to 8, or performs the bidirectional inter prediction method according to claim 9.

20. A computer program product comprising an instruction, wherein when the computer program product runs on a terminal, the terminal is enabled to perform the bidirectional inter prediction method according to any one of claims 1 to 8, or perform the bidirectional inter prediction method according to claim 9.

21. A computer-readable storage medium, comprising an instruction, wherein when the instruction is run on a terminal, the terminal is enabled to perform the bidirectional inter prediction method according to any one of claims 1 to 8, or perform the bidirectional inter prediction method according to claim 9.

22. A video decoder, comprising a non-volatile storage medium and a central

processing unit, wherein the non-volatile storage medium stores an executable program, the central processing unit is connected to the non-volatile storage medium, and when the central processing unit executes the executable program, the video decoder performs the bidirectional inter prediction method according to any one of claims 1 to 8, or performs the bidirectional inter prediction method according to claim 9.

23. A decoder, wherein the decoder comprises the bidirectional inter prediction apparatus according to any one of claims 10 to 17 and a reconstruction module, wherein the reconstruction module is configured to determine reconstructed sample values of a current picture block based on prediction samples obtained by the bidirectional inter prediction apparatus; or the decoder comprises the bidirectional inter prediction apparatus according to claim 18 and a reconstruction module, wherein the reconstruction module is configured to determine reconstructed sample values of a current picture block based on prediction samples obtained by the bidirectional inter prediction apparatus.

24. A decoding method, wherein the method is applied to bidirectional inter prediction, and the method comprises:

obtaining a first identifier;

obtaining a first motion vector difference of a current picture block; and

when a value of the first identifier is a first preset value, determining a second motion vector difference of the current picture block based on the first motion vector difference, wherein the first motion vector difference belongs to motion information of the current picture block in a first direction, and the second motion vector difference belongs to motion information of the current picture block in a second direction.

25. The method according to claim 24, wherein the determining a second motion vector difference of the current picture block based on the first motion vector difference comprises:

obtaining the second motion vector difference according to the following formula:

$$mvd_lY = -mvd_lX$$

wherein mvd_lY represents the second motion vector difference, and mvd_lX represents the first motion vector difference.

26. The method according to claim 24 or 25, wherein the method further comprises:

obtaining a first predicted motion vector and a second predicted motion vector;

determining a first motion vector based on the first predicted motion vector and the first motion vector difference;

determining a second motion vector based on the second predicted motion vector and the second motion vector difference; and

determining prediction samples of the current picture block based on the first motion vector and the second motion vector; wherein

the first predicted motion vector and the first motion vector correspond to the first direction, and the second predicted motion vector and the second motion vector correspond to the second direction.

27. The method according to claim 26, wherein the current picture block comprises a first reference frame list in the first direction and a second reference frame list in the second direction, and the determining prediction samples of the current picture block based on the first motion vector and the second motion vector comprises:

obtaining a reference frame index of the first reference frame list and a reference frame index of the second reference frame list;

determining a first reference picture block based on the reference frame index of the first reference frame list, the first motion vector, and the first reference frame list;

determining a second reference picture block based on the reference frame index of the second reference frame list, the second motion vector, and the second reference frame list; and

determining the prediction samples of the current picture block based on the first reference picture block and the second reference picture block.

28. The method according to any one of claims 24 to 27, wherein before the obtaining a first identifier, the method further comprises: determining that a sequence number of a current frame in which the current picture block is located satisfies a preset condition, wherein the preset condition comprises a condition that the sequence number of the current frame is between a sequence number of a first reference frame and a sequence number of a second reference frame, the first reference frame belongs to the

first reference frame list, and the second reference frame belongs to the second reference frame list.

29. The method according to any one of claims 24 to 28, wherein the method further comprises:

when the value of the first identifier is a second preset value, parsing a bitstream to obtain the second motion vector.

30. The method according to claim 29, wherein before the obtaining a first identifier, the method further comprises: determining that the sequence number of the current frame in which the current picture block is located does not satisfy the preset condition, wherein the preset condition comprises the condition that the sequence number of the current frame is between the sequence number of the first reference frame and the sequence number of the second reference frame, the first reference frame belongs to the first reference frame list, and the second reference frame belongs to the second reference frame list.

31. A bidirectional inter prediction apparatus, comprising:

an obtaining unit, configured to: obtain a first identifier, and obtain a first motion vector difference of a current picture block; and

a determining unit, configured to: when a value of the first identifier is a first preset value, determine a second motion vector difference of the current picture block based on the first motion vector difference, wherein the first motion vector difference belongs to motion information of the current picture block in a first direction, and the second motion vector difference belongs to motion information of the current picture block in a second direction.32. The apparatus according to claim 31, wherein the determining unit is specifically configured to obtain the second motion vector difference according to the following formula:

$$mvd_lY = -mvd_lX$$

wherein mvd_lY represents the second motion vector difference, and mvd_lX represents the first motion vector difference.

33. The apparatus according to claim 31 or 32, wherein the obtaining unit is specifically configured to obtain a first predicted motion vector and a second predicted

motion vector; and the determining unit is specifically configured to: determine a first motion vector based on the first predicted motion vector and the first motion vector difference, determine a second motion vector based on the second predicted motion vector and the second motion vector difference, and determine prediction samples of the current picture block based on the first motion vector and the second motion vector, wherein the first predicted motion vector and the first motion vector correspond to the first direction, and the second predicted motion vector and the second motion vector correspond to the second direction.

34. The apparatus according to claim 33, wherein the current picture block comprises a first reference frame list in the first direction and a second reference frame list in the second direction; the obtaining unit is specifically configured to obtain a reference frame index of the first reference frame list and a reference frame index of the second reference frame list; and the determining unit is specifically configured to: determine a first reference picture block based on the reference frame index of the first reference frame list, the first motion vector, and the first reference frame list, determine a second reference picture block based on the reference frame index of the second reference frame list, the second motion vector, and the second reference frame list, and determine the prediction samples of the current picture block based on the first reference picture block and the second reference picture block.

35. The apparatus according to any one of claims 31 to 34, wherein the obtaining unit is further specifically configured to: before obtaining the first identifier, determine that a sequence number of a current frame in which the current picture block is located satisfies a preset condition, wherein the preset condition comprises a condition that the sequence number of the current frame is between a sequence number of a first reference frame and a sequence number of a second reference frame, the first reference frame belongs to the first reference frame list, and the second reference frame belongs to the second reference frame list.

36. An encoding method, wherein the method is applied to bidirectional inter prediction, and the method comprises:

determining a first motion vector difference of a current picture block;

determining a first identifier, wherein when a value of the first identifier is a first preset value, the first identifier is used to indicate that a second motion vector difference of the current picture block may be determined based on the first motion vector difference, wherein the first motion vector difference belongs to motion information of the current picture block in a first direction, and the second motion vector difference belongs to motion information of the current picture block in a second direction; and

encoding the first identifier and the first motion vector difference into a bitstream.

37. The method according to claim 36, wherein that a second motion vector difference of the current picture block may be determined based on the first motion vector difference comprises: obtaining the second motion vector difference according to the following formula:

$$mvd_lY = -mvd_lX$$

wherein mvd_lY represents the second motion vector difference, and mvd_lX represents the first motion vector difference.

38. The method according to claim 36 or 37, wherein the determining a first motion vector difference of a current picture block comprises:

determining a first motion vector, and obtaining a first predicted motion vector; and

determining the first motion vector difference based on the first motion vector and the first predicted motion vector.

39. The method according to claim 38, wherein the method further comprises:

obtaining a second predicted motion vector;

determining a second motion vector based on the second predicted motion vector and the second motion vector difference; and

determining prediction samples of the current picture block based on the first motion vector and the second motion vector; wherein

the first predicted motion vector and the first motion vector correspond to the first direction, and the second predicted motion vector and the second motion vector correspond to the second direction.

40. The method according to claim 39, wherein the current picture block comprises

a first reference frame list in the first direction and a second reference frame list in the second direction, and the determining prediction samples of the current picture block based on the first motion vector and the second motion vector comprises:

obtaining a reference frame index of the first reference frame list and a reference frame index of the second reference frame list;

determining a first reference picture block based on the reference frame index of the first reference frame list, the first motion vector, and the first reference frame list;

determining a second reference picture block based on the reference frame index of the second reference frame list, the second motion vector, and the second reference frame list; and

determining the prediction samples of the current picture block based on the first reference picture block and the second reference picture block.

41. The method according to any one of claims 36 to 40, wherein before the encoding the first identifier into a bitstream, the method further comprises: determining that a sequence number of a current frame in which the current picture block is located satisfies a preset condition, wherein the preset condition comprises a condition that the sequence number of the current frame is between a sequence number of a first reference frame and a sequence number of a second reference frame, the first reference frame belongs to the first reference frame list, and the second reference frame belongs to the second reference frame list.

42. The method according to any one of claims 36 to 41, comprising: when the value of the first identifier is a second preset value, determine the second motion vector difference of the current picture block, and encode the second motion vector difference into the bitstream.

43. The method according to any one of claims 36 to 40, wherein before the encoding the first identifier into a bitstream, the method further comprises: determining that a sequence number of a current frame in which the current picture block is located does not satisfy a preset condition, wherein the preset condition comprises a condition that the sequence number of the current frame is between a sequence number of a first reference frame and a sequence number of a second reference frame, the first reference

frame belongs to the first reference frame list, and the second reference frame belongs to the second reference frame list.

44. A bidirectional inter prediction apparatus, comprising:

an obtaining unit, configured to determine a first motion vector difference of a current picture block;

a determining unit, configured to determine a first identifier, wherein when a value of the first identifier is a first preset value, the first identifier is used to indicate that a second motion vector difference of the current picture block may be determined based on the first motion vector difference, wherein the first motion vector difference belongs to motion information of the current picture block in a first direction, and the second motion vector difference belongs to motion information of the current picture block in a second direction; and

an encoding unit, configured to encode the first identifier and the first motion vector difference into a bitstream.

45. The apparatus according to claim 44, wherein the determining unit is specifically configured to obtain the second motion vector difference according to the following formula:

$$mvd_lY = -mvd_lX$$

wherein mvd_lY represents the second motion vector difference, and mvd_lX represents the first motion vector difference.

46. The apparatus according to claim 44 or 45, wherein the obtaining unit is specifically configured to:

determine a first motion vector, and obtain a first predicted motion vector; and

determine the first motion vector difference based on the first motion vector and the first predicted motion vector.

47. The apparatus according to claim 46, wherein the obtaining unit is further configured to: obtain a second predicted motion vector, and determine a second motion vector based on the second predicted motion vector and the second motion vector difference; and

the apparatus further comprises a prediction unit, configured to determine

prediction samples of the current picture block based on the first motion vector and the second motion vector; wherein

the first predicted motion vector and the first motion vector correspond to the first direction, and the second predicted motion vector and the second motion vector correspond to the second direction.

48. The apparatus according to claim 47, wherein the current picture block comprises a first reference frame list in the first direction and a second reference frame list in the second direction, and the prediction unit is specifically configured to:

obtain a reference frame index of the first reference frame list and a reference frame index of the second reference frame list;

determine a first reference picture block based on the reference frame index of the first reference frame list, the first motion vector, and the first reference frame list;

determine a second reference picture block based on the reference frame index of the second reference frame list, the second motion vector, and the second reference frame list; and

determine the prediction samples of the current picture block based on the first reference picture block and the second reference picture block.

49. The apparatus according to any one of claims 44 to 48, wherein the apparatus comprises a judging unit, configured to: before the encoding unit encodes the first identifier into the bitstream, determine that a sequence number of a current frame in which the current picture block is located satisfies a preset condition, wherein the preset condition comprises a condition that the sequence number of the current frame is between a sequence number of a first reference frame and a sequence number of a second reference frame, the first reference frame belongs to the first reference frame list, and the second reference frame belongs to the second reference frame list.

50. The apparatus according to any one of claims 44 to 49, wherein the obtaining unit is further configured to: when the value of the first identifier is a second preset value, determine the second motion vector difference of the current picture block, and encode the second motion vector difference into the bitstream.

51. The apparatus according to any one of claims 44 to 48, wherein the apparatus

comprises a judging unit, configured to: before the encoding unit encodes the first identifier into the bitstream, determine that a sequence number of a current frame in which the current picture block is located does not satisfy a preset condition, wherein the preset condition comprises a condition that the sequence number of the current frame is between a sequence number of a first reference frame and a sequence number of a second reference frame, the first reference frame belongs to the first reference frame list, and the second reference frame belongs to the second reference frame list.

52. A storage medium, wherein the storage medium comprises the bitstream generated by using the method according to any one of claims 24 to 30 or the bitstream obtained through decoding by using the method according to any one of claims 36 to 43.

53. An image processing apparatus, comprising a processor, a memory, a communications interface, and a bus, wherein the processor is connected to the memory and the communications interface by using the bus;

the memory is configured to store an instruction; and

the processor is configured to execute the instruction, and when the processor executes the instruction stored in the memory, the processor is enabled to perform the encoding method according to any one of claims 24 to 30 or the decoding method according to any one of claims 36 to 43.