CLAIMS

What is claimed is:

1. An encoding method, comprising:

determining whether a plurality of preset conditions are satisfied for a current picture block;

when the plurality of preset conditions are satisfied for the current picture block, performing bi-directional optical flow BDOF processing on a current picture block, to obtain a predicted sample value of the current picture block , wherein the plurality of preset conditions comprises: Condition B: first prediction direction indication information predFlagL0 corresponding to a first list (List1) is equal to 1 and second prediction direction indication information predFlagL1 corresponding to a second list (list0) is equal to 1, wherein predFlagL0 and predFlagL1 both equal to 1 indicates that bi-directional prediction is applied for the current picture block;

Condition D: MotionModelIdc being equal to 0, wherein MotionModelIdc being equal to 0 indicates that a motion model for motion compensation of the current picture block is translational motion;

Condition E: merge_subblock_flag included in a syntax element associated with the current picture block is equal to 0, wherein merge_subblock_flag equal to 0 indicates that a subblock merge mode is not applied for the current picture block;

Condition F: sym_mvd_flag included in the syntax element is equal to 0, wherein sym_mvd_flag being equal to 0 indicates that mvd_coding syntax structure is present for the current picture block;

Condition G: bcwIdx included in the syntax element is equal to 0, wherein bcwIdx indicates a bi-directional prediction weight index for the current picture block;

Condition H: cIdx is equal to 0, wherein cIdx represents a colour component index of the current picture block;

Condition I: a height H of the current picture block is greater than or equal to 8; a width W of the current picture block is greater than or equal to 8; and a product of the width W of the current picture block and the height H of the current picture block is greater than 128; and

Condition J: luma_weight_l0_flag[refIdxL0] and luma_weight_l1_flag[refIdxL1] that are

included in the syntax element are both equal to 0, wherein luma_weight_l0_flag being equal to 0 indicates that first weighting factors for a luma component of list0 prediction are not present, and wherein luma_weight_l1_flag being equal to 0 indicates that second weighting factors for a luma component of list1 prediction are not present;

when the condition I of the plurality of preset conditions is not satisfied for the current picture block, skipping the performing bi-directional optical flow BDOF processing on the current picture block, and obtaining the predicted sample value of the current picture block through prediction based on a reference sample value corresponding to the first list and a reference sample value corresponding to the second list according to a decoder-side motion vector refinement (DMVR) technology ;

obtaining a reconstructed sample value of the current picture block based on at least the predicted sample value of the current picture block; and

encoding the syntax element associated with the current picture block into a to-be-transmitted bitstream, wherein the syntax element is at least used to indicate that bi-directional prediction is applied, wherein

W and H each are 2^n, and n is an integer.

2. The method according to claim 1, wherein the syntax element comprises an index of target candidate motion information, the target candidate motion information comprises target candidate motion vectors, reference frame indices, and prediction direction indication information, the prediction direction indication information is used to indicate that bi-directional prediction is applied for the current picture block, the target candidate motion vectors comprise a first motion vector corresponding to a first list and a second motion vector corresponding to a second list, and the reference frame indices comprise a first reference frame index corresponding to the first list and a second reference frame index corresponding to the second list.

3. The method according to claim 1, wherein the syntax element comprises first indices, second indices, prediction direction indication information, and a motion vector difference MVD, the first indices are used to indicate target candidate motion vector predictors, the target candidate motion vector predictors comprise a first motion vector predictor corresponding to a first list and a second motion vector predictor corresponding to a second list, and the motion vector difference MVD comprises a first MVD corresponding to the first list and/or a second MVD corresponding

to the second list;

the second indices are used to indicate reference frames of the current picture block, the reference frames comprise a first reference frame corresponding to the first list and a second reference frame corresponding to the second list, and the prediction direction indication information is used to indicate that bi-directional prediction is applied for the current picture block;

a first motion vector corresponding to the first list is obtained based on the first motion vector predictor corresponding to the first list and the first MVD corresponding to the first list; and

a second motion vector corresponding to the second list is obtained based on the second motion vector predictor corresponding to the second list and the second MVD corresponding to the second list.

4. The method according to any one of claims 1 to 3, wherein the method further comprises:

determining a sample residual based on a sample value of the current picture block and the predicted sample value of the current picture block; and

encoding the the sample residual into the to-be-transmitted bitstream.

5. A decoding method, comprising:

parsing a bitstream to obtain a syntax element, wherein the syntax element is at least used to indicate that bi-directional prediction is applied for a current picture block;

determining whether a plurality of preset conditions are satisfied for the current picture block;

when the plurality of preset conditions are satisfied, performing bi-directional optical flow BDOF processing on a current picture block, to obtain a predicted sample value of the current picture block , wherein the plurality of preset conditions comprise:

Condition B: first prediction direction indication information predFlagL0 corresponding to a first list (List1) is equal to 1 and second prediction direction indication information predFlagL1 corresponding to a second list (list0) is equal to 1, wherein predFlagL0 and predFlagL1 both equal to 1 indicates that bi-directional prediction is applied for the current picture block;

Condition D: MotionModelIdc being equal to 0, wherein MotionModelIdc being equal to 0 indicates that a motion model for motion compensation of the current picture block is translational motion;

Condition E: merge_subblock_flag included in the syntax element is equal to 0, wherein

merge_subblock_flag equal to 0 indicates that a subblock merge mode is not applied for the current picture block;

Condition F: sym_mvd_flag included in the syntax element is equal to 0, wherein sym_mvd_flag being equal to 0 indicates that mvd_coding syntax structure is present for the current picture block;

Condition G: bcwIdx included in the syntax element is equal to 0, wherein bcwIdx indicates a bi-directional prediction weight index for the current picture block;

Condition H: cIdx is equal to 0, wherein cIdx represents a colour component index of the current picture block;

Condition I: a height H of the current picture block is greater than or equal to 8; a width W of the current picture block is greater than or equal to 8; and a product of the width W of the current picture block and the height H of the current picture block is greater than 128; and

Condition J: luma_weight_l0_flag[refIdxL0] and luma_weight_l1_flag[refIdxL1] that are included in the syntax element are both equal to 0, wherein luma_weight_l0_flag being equal to 0 indicates that first weighting factors for a luma component of list0 prediction are not present, and wherein luma_weight_l1_flag being equal to 0 indicates that second weighting factors for a luma component of list1 prediction are not present;

when the condition I of the plurality of preset conditions is not satisfied for the current picture block, skipping the performing bi-directional optical flow BDOF processing on the current picture block, and obtaining the predicted sample value of the current picture block through prediction based on a reference sample value corresponding to the first list and a reference sample value corresponding to the second list according to a decoder-side motion vector refinement (DMVR) technology ;

obtaining a reconstructed sample value of the current picture block based on at least the predicted sample value of the current picture block, wherein

W and H each are 2^n, and n is an integer.

6. The method according to claim 5, wherein the syntax element comprises an index of target candidate motion information, the target candidate motion information comprises target candidate motion vectors, reference frame indices, and prediction direction indication information, the prediction direction indication information is used to indicate that bi-directional prediction is

applied for the current picture block, the target candidate motion vectors comprise a first motion vector corresponding to a first list and a second motion vector corresponding to a second list, and the reference frame indices comprise a first reference frame index corresponding to the first list and a second reference frame index corresponding to the second list.

7. The method according to claim 5, wherein the syntax element comprises first indices, second indices, prediction direction indication information, and a motion vector difference MVD, the first indices are used to indicate target candidate motion vector predictors, the target candidate motion vector predictors comprise a first motion vector predictor corresponding to a first list and a second motion vector predictor corresponding to a second list, and the motion vector difference MVD comprises a first MVD corresponding to the first list and/or a second MVD corresponding to the second list;

the second indices are used to indicate reference frames of the current picture block, the reference frames comprise a first reference frame corresponding to the first list and a second reference frame corresponding to the second list, and the prediction direction indication information is used to indicate that bi-directional prediction is applied for the current picture block;

a first motion vector corresponding to the first list is obtained based on the first motion vector predictor corresponding to the first list and the first MVD corresponding to the first list; and

a second motion vector corresponding to the second list is obtained based on the second motion vector predictor corresponding to the second list and the second MVD corresponding to the second list.

8. The method according to any one of claims 5 to 7, wherein the parsing a bitstream to obtain a syntax element comprises: parsing the bitstream to obtain a sample residual and the syntax element; and

the obtaining a reconstructed sample value of the current picture block based on at least the predicted sample value of the current picture block comprises: determining the reconstructed sample value of the current picture block based on the sample residual and the predicted sample value of the current picture block.

9. A computer-readable storage medium, wherein the computer-readable storage medium stores a computer program, and when the computer program is run on a processor, the method

according to any one of claims 1 to 8 is implemented.

10. An encoder, comprising processing circuitry for carrying out the method according to any one of claims 1 to 4.

11. A decoder, comprising processing circuitry for carrying out the method according to any one of claims 5 to 8.