CLAIMS

What is claimed is:

1. A method for video predictive coding, comprising:

acquiring decision information related to a current coding block in inter-frame predictive coding, wherein the decision information comprises one of: pre-analysis information determined by a coder in a lightweight video coding pre-analysis, coding information of a plurality of sub-blocks acquired by recursively coding the current coding block, and information of an executed mode determined based on the executed mode;

determining, based on the decision information, whether to skip motion estimation (ME) coding of the current coding block, wherein the skipping the ME coding comprises skipping all ME and skipping partially ME;

wherein in response to determining that the decision information is the pre-analysis information determined by the coder in the lightweight video coding pre-analysis, determining, based on the decision information, whether to skip the ME coding of the current coding block comprises:

determining, based on a size of the current coding block, a number of corresponding downsampling blocks, and indexing pre-analysis information of each of the downsampling blocks, wherein the number of the downsampling blocks is plural; and

summarizing the pre-analysis information of the downsampling blocks, and determining, based on a result of the summarization, whether to skip the ME coding of the current coding block;

the pre-analysis information of the downsampling block comprises an inter-frame coding cost, an intra-frame coding cost, and a predicted best mode of the downsampling block; and

summarizing the pre-analysis information of the downsampling blocks, and determining, based on the result of the summarization, whether to skip the ME coding of the current coding block comprise:

acquiring an estimated inter-frame coding cost of the current coding block by calculating a sum of the inter-frame coding costs of all the downsampling blocks corresponding to the current coding block;

acquiring an estimated intra-frame coding cost of the current coding block by calculating a sum of the intra-frame coding costs of all the downsampling blocks

corresponding to the current coding block;

calculating a number of downsampling blocks of which the best mode is an intra-frame prediction mode in all the downsampling blocks corresponding to the current coding block, and determining, based on the number, a first ratio at which the best mode of the current coding block is the intra-frame prediction mode; and

skipping the ME coding of the current coding block in response to determining that the first ratio is greater than a first predetermined ratio threshold, and that a product of the estimated intra-frame coding cost and a first adjustment factor is less than a product of the estimated inter-frame coding cost and a second adjustment factor, wherein the first adjustment factor is less than the second adjustment factor.

2. The method according to claim 1, wherein

in response to determining that the decision information is the coding information of the plurality of sub-blocks acquired by recursively coding the current coding block, the coding information of the plurality of sub-blocks comprises a best mode of each of the plurality of sub-blocks and whether to recursively divide each of the plurality of sub-blocks; and

determining, based on the decision information, whether to skip the ME coding of the current coding block comprises:

determining, based on the best mode of each of the plurality of sub-blocks of the current coding block, a second ratio at which the best mode of the current coding block is an intra-frame prediction mode, and a third ratio at which the best mode of the current coding block is a skipping (SKIP) mode;

determining a recursion ratio of the plurality of sub-blocks of the current coding block based on whether to recursively divide each of the plurality of sub-blocks of the current coding block; and

determining, based on at least one of the second ratio, the third ratio, and the recursion ratio of the plurality of sub-blocks, whether to skip the ME coding of the current coding block.

3. The method according to claim 2, wherein determining, based on at least one of the second ratio, the third ratio, and the recursion ratio of the plurality of sub-blocks, whether to skip the ME coding of the current coding block comprises:

skipping the ME coding of the current coding block in response to determining that the recursion ratio of the plurality of sub-blocks is greater than a predetermined recursion ratio threshold, and that the second ratio is greater than a second predetermined ratio threshold; or

skipping the ME coding of the current coding block in response to determining that the third ratio is greater than a third predetermined ratio threshold, and that the recursion ratio of the plurality of sub-blocks is greater than a fourth predetermined ratio threshold.

4. The method according to claim 1, wherein

in response to determining that the decision information is the information of the executed mode determined based on the executed mode, the information of the executed mode comprises a sum of absolute transformed difference (SATD) cost of a temporary best mode and an intra-frame prediction SATD cost; and

determining, based on the decision information, whether to skip the ME coding of the current coding block comprises:

skipping the ME coding of the current coding block in response to determining that the current coding block is not recursively coded, and that a product of the intra-frame prediction SATD cost and a third adjustment factor is less than a product of the SATD cost of the temporary best mode and a fourth adjustment factor, wherein the third adjustment factor is greater than the fourth adjustment factor.

5. The method according to claim 1, wherein

in response to determining that the decision information is the information of the executed mode determined based on the executed mode, the executed mode at least comprises a 2N x 2N mode and a BIDIR mode, and the information of the executed mode comprises an SATD cost of a MERGE mode executed in the 2N x 2N mode, and the SATD cost of a temporary best mode, wherein N is a positive integer; and

determining, based on the decision information, whether to skip the ME coding of the current coding block comprises:

determining, in response to determining that a current prediction unit is a non-square prediction unit, whether the SATD cost of the MERGE mode is less than the SATD cost of the temporary best mode; and

executing the MERGE mode on the non-square prediction unit in response to determining that the SATD cost of the MERGE mode is less than the SATD cost of the temporary best mode, and skipping forward ME coding, backward ME coding, and bidirectional ME coding of the non-square prediction unit.

6. The method according to claim 5, wherein in response to determining that the current coding block is recursively coded, the information of the executed mode further comprises a ratio at which a best mode of the current coding block is a SKIP mode; and

determining, based on the decision information, whether to skip the ME coding of the current coding block further comprises:

executing the MERGE mode on the non-square prediction unit in response to determining that the SATD cost of the MERGE mode is less than the SATD cost of the temporary best mode, and that the ratio at which the best mode of the current coding block is the SKIP mode is greater than a predetermined ratio threshold, and skipping the forward ME coding, the backward ME coding, and the bidirectional ME coding of the non-square prediction unit.

7. An apparatus for video predictive coding, comprising:

a decision information acquiring module, configured to acquire decision information related to a current coding block in inter-frame predictive coding, wherein the decision information comprises one of: pre-analysis information determined by a coder in a lightweight video coding pre-analysis, coding information of a plurality of sub-blocks acquired by recursively coding the current coding block, and information of an executed mode determined based on the executed mode; and

a skipping ME determining module, configured to determine, based on the decision information, whether to skip motion estimation (ME) coding of the current coding block, wherein the skipping the ME coding comprises skipping all ME and skipping partially ME;

in the case that the decision information is the pre-analysis information determined by the coder in the lightweight video coding pre-analysis, the skipping ME determining module comprises a pre-analysis information indexing sub-module and a pre-analysis information determining sub-module; wherein

the pre-analysis information indexing sub-module is configured to determine, based on a size of the current coding block, a number of corresponding downsampling blocks, and index the pre-analysis information of each of the downsampling blocks; wherein the number of the downsampling blocks is plural;

the pre-analysis information determining sub-module is configured to summarize the pre-analysis information of the downsampling blocks, and determine, based on a result of the summarization, whether to skip the ME coding of the current coding block;

the pre-analysis information of the downsampling block comprises an inter-frame coding cost, an intra-frame coding cost, and a predicted best mode of the downsampling block;

the pre-analysis information determining sub-module is configured to:

acquire an estimated inter-frame coding cost of the current coding block by calculating a sum of the inter-frame coding costs of all the downsampling blocks corresponding to the current coding block;

acquire an estimated intra-frame coding cost of the current coding block by calculating a sum of the intra-frame coding costs of all the downsampling blocks corresponding to the current coding block;

calculate a number of downsampling blocks of which the best mode is an intra-frame prediction mode in all the downsampling blocks corresponding to the current coding block, and determine, based on the number, a first ratio at which the best mode of the current coding block is the intra-frame prediction mode; and

skip the ME coding of the current coding block in the case that the first ratio is greater than a first predetermined ratio threshold, and a product of the estimated intra-frame coding cost and a first adjustment factor is less than a product of the estimated inter-frame coding cost and a second adjustment factor, wherein the first adjustment factor is less than the second adjustment factor.

8. An electronic device for video predictive coding, comprising: a memory, a processor, and a computer program stored on the memory and runnable on the processor, wherein the processor, when loading and running the program, is caused to perform the method as defined in any one of claims 1 to 6.

9. A computer-readable storage medium, storing a computer program therein, wherein the computer program, when loaded and run by a processor, causes the processor to perform the method as defined in any one of claims 1 to 6.