

## CLAIMS

What is claimed is:

1. A decoding method, comprising:

acquiring coded data of a current block;

determining that a height and a width of the current block are both less than or equal to a preset threshold and the current block is a luma block;

acquiring a transform pair index corresponding to the current block from the coded data, wherein in the case that the transform pair index comprises five index values, a transform pair mapped by the transform pair index is (DCT2, DCT2) in response to the index value of the transform pair index being a first index value; the transform pair mapped by the transform pair index is (DST7, DST7) in response to the index value of the transform pair index being a second index value; the transform pair mapped by the transform pair index is (DCT8, DST7) in response to the index value of the transform pair index being a third index value; the transform pair as mapped by the transform pair index is (DST7, DCT8) in response to the index value of the transform pair index being a fourth index value; and the transform pair mapped by the transform pair index is (DCT8, DCT8) in response to the index value of the transform pair index being a fifth index value; wherein a binarized codeword corresponding to the transform pair index occupies at most four bits and a first bit of the binarized codeword corresponding to the transform pair index is intended to indicate whether the transform pair mapped by the first index value is selected, wherein the transform pair (DCT2, DCT2) mapped by the first index value is selected in response to a value of the first bit being a first value, and the transform pair mapped by one of the remaining index values is selected in response to the value of the first bit being a second value; and wherein the first bit of the binarized codeword corresponding to the transform pair index is decoded by context-based adaptive binary arithmetic coding based on one context model; and

determining the transform pair corresponding to the current block based on the transform pair index, wherein the transform pair comprises a horizontal transform kernel and a vertical transform kernel,

wherein the decoding method further comprises:

decoding other bits by context-based adaptive binary arithmetic coding (CABAC) in response to the binarized codeword corresponding to the transform pair index further comprising the other bits in addition to the first bit.

2. The decoding method according to claim 1, wherein determining the transform pair corresponding to the current block based on the transform pair index comprises:

determining, based on the transform pair index corresponding to the current block and a preconfigured corresponding relationship between the transform pair index and the transform pair, the transform pair corresponding to the current block, wherein the corresponding relationship comprises a mapping relationship between five index values of the transform pair index and five transform pairs.

3. The decoding method according to claim 1, wherein in response to the value of the first bit being the second value, the first bit is intended to indicate that the transform pair mapped by one of the remaining index values is selected, the transform pair mapped by one of the remaining index values being one of four transform pairs (DST7, DST7), (DCT8, DST7), (DST7, DCT8), and (DCT8, DCT8); wherein

a value of a second bit of the binarized codeword is intended to identify whether the transform pair selected by the current block is (DST7, DST7) or one of (DCT8, DST7), (DST7, DCT8), and (DCT8, DCT8);

a value of a third bit of the binarized codeword is intended to identify whether the transform pair selected by the current block is (DCT8, DST7) or one of (DST7, DCT8) and (DCT8, DCT8); and

a value of a fourth bit of the binarized codeword is intended to identify whether the transform pair selected by the current block is (DST7, DCT8) or (DCT8, DCT8).

4. The decoding method according to claim 1, wherein determining the transform pair corresponding to the current block based on the transform pair index comprises:

determining that the transform pair corresponding to the current block is (DCT2, DCT2) in response to the first bit being 0;

determining that the transform pair corresponding to the current block is (DST7, DST7) in response to the first bit being 1 and a second bit being 0;

determining that the transform pair corresponding to the current block is (DCT8, DST7) in response to the first bit being 1, the second bit being 1, and a third bit being 0;

determining that the transform pair corresponding to the current block is (DST7, DCT8) in response to the first bit being 1, the second bit being 1, the third bit being 1, and a fourth bit being 0; and

determining that the transform pair corresponding to the current block is (DCT8, DCT8)

in response to the first bit being 1, the second bit being 1, the third bit being 1, and the fourth bit being 1.

5. The decoding method according to claim 1, wherein prior to acquiring the transform pair index corresponding to the current block from the coded data, the decoding method further comprises:

identifying whether the coded data from a coding device carries a target flag, wherein the target flag is intended to indicate that explicit multi-kernel transform is enabled.

6. The decoding method according to claim 1, wherein acquiring the transform pair index corresponding to the current block from the coded data comprises:

acquiring the transform pair index corresponding to the current block from the coded data in response to determining that the current block is the luma block and the height and the width of the current block are both less than or equal to 32; and

directly determining, instead of decoding the transform pair index corresponding to the current block, (DCT2, DCT2) as the transform pair selected by the current block in response to determining that the current block is not the luma block or the height or width of the current block is greater than 32.

7. The decoding method according to claim 1, wherein the first value of the first bit of the binarized codeword corresponding to the transform pair index is 0, and the second value of the first bit of the binarized codeword corresponding to the transform pair index is 1; the binarized codeword of the first index value is 0; the binarized codeword of the second index value is 10; the binarized codeword of the third index value is 110; the binarized codeword of the fourth index value is 1110; and the binarized codeword of the fifth index value is 1111.

8. A coding method, comprising:

determining that a height and a width of a current block are both less than or equal to a preset threshold and the current block is a luma block;

determining a transform pair corresponding to the current block and a transform pair index corresponding to the current block, wherein in the case that the transform pair index comprises five index values, the transform pair mapped by the transform pair index is (DCT2, DCT2) in response to the index value of the transform pair index being a first index value; the transform pair mapped by the transform pair index is (DST7, DST7) in response to the index value of the

transform pair index being a second index value; the transform pair mapped by the transform pair index is (DCT8, DST7) in response to the index value of the transform pair index being a third index value; the transform pair mapped by the transform pair index is (DST7, DCT8) in response to the index value of the transform pair index being a fourth index value; and the transform pair mapped by the transform pair index is (DCT8, DCT8) in response to the index value of the transform pair index being a fifth index value; and wherein a binarized codeword corresponding to the transform pair index occupies at most four bits and a first bit of the binarized codeword corresponding to the transform pair index is intended to indicate whether the transform pair mapped by the first index value is selected, wherein the transform pair (DCT2, DCT2) mapped by the first index value is selected in response to a value of the first bit being a first value, and the transform pair mapped by one of the remaining index values is selected in response to the value of the first bit being a second value; and

coding the transform pair index by subjecting the first bit of the binarized codeword corresponding to the transform pair index to context-based adaptive binary arithmetic coding based on one context model, and adding the transform pair index as coded to coded data of the current block,

wherein the coding method further comprises:

coding other bits by context-based adaptive binary arithmetic coding (CABAC) in response to the binarized codeword corresponding to the transform pair index further comprising the other bits in addition to the first bit.

9. The coding method according to claim 8, wherein determining the transform pair corresponding to the current block and the transform pair index corresponding to the current block comprises:

determining the transform pair corresponding to the current block; and

determining, based on the transform pair and a preconfigured corresponding relationship between the transform pair index and the transform pair, the transform pair index corresponding to the current block, wherein the corresponding relationship comprises a mapping relationship between five index values of the transform pair index and five transform pairs.

10. The coding method according to claim 8, wherein in response to the value of the first bit being the second value, the first bit is intended to indicate that the transform pair mapped by one of the remaining index values is selected, the transform pair mapped by one of the remaining index values being one of four transform pairs (DST7, DST7), (DCT8, DST7),

(DST7, DCT8), and (DCT8, DCT8); wherein

a value of a second bit of the binarized codeword is intended to identify whether the transform pair selected by the current block is (DST7, DST7) or one of (DCT8, DST7), (DST7, DCT8) and (DCT8, DCT8);

a value of a third bit of the binarized codeword is intended to identify whether the transform pair selected by the current block is (DCT8, DST7) or one of (DST7, DCT8) and (DCT8, DCT8); and

a value of a fourth bit of the binarized codeword is intended to identify whether the transform pair selected by the current block is (DST7, DCT8) or (DCT8, DCT8).

11. The coding method according to 8, wherein

the first bit of the binarized codeword is 0 in response to the transform pair corresponding to the current block being (DCT2, DCT2);

the first bit of the binarized codeword is 1 and the second bit is 0 in response to the transform pair corresponding to the current block being (DST7, DST7);

the first bit of the binarized codeword is 1, the second bit is 1, and the third bit is 0 in response to the transform pair corresponding to the current block being (DCT8, DST7);

the first bit of the binarized codeword is 1, the second bit is 1, the third bit is 1, and the fourth bit is 0 in response to the transform pair corresponding to the current block being (DST7, DCT8); and

the first bit of the binarized codeword is 1, the second bit is 1, the third bit is 1, and the fourth bit is 1 in response to the transform pair corresponding to the current block being (DCT8, DCT8).

12. The coding method according to claim 8, further comprising:

adding a target flag to the coded data, wherein the target flag is intended to indicate that explicit multi-kernel transform is enabled.

13. The coding method according to claim 8, wherein determining the transform pair corresponding to the current block and the transform pair index corresponding to the current block comprises:

determining the transform pair corresponding to the current block and the transform pair index corresponding to the current block in response to determining that the current block is the luma block and the height and the width of the current block are both less than or equal to

32; and

directly determining, instead of coding the transform pair index corresponding to the current block, (DCT2, DCT2) as the transform pair selected by the current block, in response to determining that the current block is not the luma block or the height or width of the current block is greater than 32.

14. The coding method according to claim 8, wherein the first value of the first bit of the binarized codeword corresponding to the transform pair index is 0, and the second value of the first bit of the binarized codeword corresponding to the transform pair index is 1; the binarized codeword of the first index value is 0; the binarized codeword of the second index value is 10; the binarized codeword of the third index value is 110; the binarized codeword of the fourth index value is 1110; and the binarized codeword of the fifth index value is 1111.

15. A decoder, comprising a processor and a memory storing at least one instruction executable by the processor; wherein the processor, when loading and executing the at least one instruction, is caused to perform the decoding method as defined in any one of claims 1 to 7.

16. A coder, comprising a processor and a memory storing at least one instruction executable by the processor; wherein the processor, when loading and executing the at least one instruction, is caused to perform the coding method as defined in any one of claims 8 to 14.

17. A decoding device, wherein the decoding device is configured to perform any one of claims 1 to 7.

18. A coding device, wherein the coding device is configured to perform any one of claims 8 to 14.

19. A non-transitory computer-readable storage medium, storing at least one instruction executable by a processor; wherein the at least one instruction, when loaded and executed by the processor, causes the processor to perform the decoding method as defined in any one of claims 1-7.

20. A non-transitory computer-readable storage medium, storing at least one instruction executable by a processor; wherein the at least one instruction, when loaded and executed by the processor, causes the processor to perform the coding method as defined in any one of claims 8 to 14.