CLAIMS

1. A method for predicting a video colour component, applicable to an encoder, comprising:

determining at least two groups of first colour component neighboring reference values and second colour component neighboring reference values of a current coding block;

establishing at least two computing models according to the at least two groups of first colour component neighboring reference values and second colour component neighboring reference values;

selecting a computing model corresponding to the current coding block from the at least two computing models; and

acquiring, according to the computing model corresponding to the current coding block, a second colour component predicted value of at least one sample in the current coding block.

2. The method of claim 1, before determining the at least two groups of first colour component neighboring reference values and second colour component neighboring reference values of the current coding block, further comprising:

sampling neighboring reference values of a first colour component for the current coding block to acquire the first colour component neighboring reference values of the current coding block; and

sampling neighboring reference values of a second colour component for the current coding block to acquire the second colour component neighboring reference values of the current coding block.

3. The method of claim 2, wherein the operations of sampling at least comprises down-sampling.

4. The method of claim 2, determining the at least two groups of first colour component neighboring reference values and second colour component neighboring reference values of the current coding block comprises:

acquiring a first group of first colour component neighboring reference values and

second colour component neighboring reference values from the first colour component neighboring reference values of the current coding block and the second colour component neighboring reference values of the current coding block; and

acquiring a second group of first colour component neighboring reference values and second colour component neighboring reference values from the first colour component neighboring reference values of the current coding block and the second colour component neighboring reference values of the current coding block.

5. The method of claim 4, wherein establishing the at least two computing models according to the at least two groups of first colour component neighboring reference values and second colour component neighboring reference values comprises:

computing a first parameter and a second parameter of a first computing model according to the first group of first colour component neighboring reference values and second colour component neighboring reference values;

computing a first parameter and a second parameter of a second computing model according to the second group of first colour component neighboring reference values and second colour component neighboring reference values; and

determining the first computing model according to the first parameter and the second parameter of the first computing model and determining the second computing model according to the first parameter and the second parameter of the second computing model.

6. The method of claim 4, before establishing the at least two computing models according to the at least two groups of first colour component neighboring reference values and second colour component neighboring reference values, further comprising:

determining a weighting coefficient for the first group of first colour component neighboring reference values and second colour component neighboring reference values; and

determining a weighting coefficient for the second group of first colour component neighboring reference values and second colour component neighboring reference values.

7. The method of claim 6, wherein establishing the at least two computing models according to the at least two groups of first colour component neighboring reference values and second colour component neighboring reference values comprises:

computing the first parameter and the second parameter of the first computing model according to the first group of first colour component neighboring reference values and second colour component neighboring reference values and a weighting coefficient for the first group of first colour component neighboring reference values and second colour component neighboring reference values;

computing the first parameter and the second parameter of the second computing model according to the second group of first colour component neighboring reference values and second colour component neighboring reference values and a weighting coefficient for the second group of first colour component neighboring reference values and second colour component neighboring reference values; and

determining the first computing model according to the first parameter and the second parameter of the first computing model and determining the second computing model according to the first parameter and the second parameter of the second computing model.

8. The method of claim 1, wherein establishing the at least two computing models according to the at least two groups of first colour component neighboring reference values and second colour component neighboring reference values comprises:

in response to the first group of first colour component neighboring reference values being $L(m)$, the first group of second colour component neighboring reference values being $C(m)$, and the weighting coefficient for the first group of first colour component neighboring reference values and second colour component neighboring reference values being $w(m)$, computing the first parameter $\alpha 1$ and the second parameter $\beta 1$ of the first computing model according to $w(m)$, $L(m)$, $C(m)$ and an equation (1):

$$\begin{cases} \alpha 1 = \dfrac{\sum w(m) \cdot \sum (w(m) \cdot L(m) \cdot C(m)) - \sum (w(m) \cdot L(m)) \cdot \sum (w(m) \cdot C(m))}{\sum w(m) \cdot \sum (w(m) \cdot L(m) \cdot L(m)) - \sum (w(m) \cdot L(m)) \cdot \sum (w(m) \cdot L(m))} \\ \beta 1 = \dfrac{\sum (w(m) \cdot C(m)) - \alpha 1 \cdot \sum (w(m) \cdot L(m))}{\sum w(m)} \end{cases} \quad (1); \text{ and}$$

in response to the second group of first colour component neighboring reference values being $L(k)$, the second group of second colour component neighboring reference values being $C(k)$, and the weighting coefficient for the second group of first colour component neighboring reference values and second colour component neighboring reference

values being $w(k)$, computing the first parameter $\alpha 2$ and the second parameter $\beta 2$ of the second computing model according to $w(k)$, $L(k)$, $C(k)$ and an equation (2):

$$\begin{cases} \alpha 2 = \dfrac{\sum w(k) \cdot \sum (w(k) \cdot L(k) \cdot C(k)) - \sum (w(k) \cdot L(k)) \cdot \sum (w(k) \cdot C(k))}{\sum w(k) \cdot \sum (w(k) \cdot L(k) \cdot L(k)) - \sum (w(k) \cdot L(k)) \cdot \sum (w(k) \cdot L(k))} \\ \beta 2 = \dfrac{\sum (w(k) \cdot C(k)) - \alpha 2 \cdot \sum (w(k) \cdot L(k))}{\sum w(k)} \end{cases} \quad (2).$$

9. The method of claim 2, wherein the first colour component neighboring reference values of the current coding block comprises at least one of the following: first colour component neighboring reference values at left side of the current coding block or first colour component neighboring reference values at upper side of the current coding block, and

the second colour component neighboring reference values of the current coding block comprises at least one of the following: second colour component neighboring reference values at left side of the current coding block or second colour component neighboring reference values at upper side of the current coding block.

10. The method of claim 9, wherein determining the at least two groups of first colour component neighboring reference values and second colour component neighboring reference values of the current coding block comprises at least two of the following:

determining, from the first colour component neighboring reference values of the current coding block and the second colour component neighboring reference values of the current coding block, the first colour component neighboring reference values at left side of the current coding block and the second colour component neighboring reference values at left side of the current coding block to be a first group of first colour component neighboring reference values and second colour component neighboring reference values;

determining, from the first colour component neighboring reference values of the current coding block and the second colour component neighboring reference values of the current coding block, the first colour component neighboring reference values at upper side of the current coding block and the second colour component neighboring reference values at upper side of the current coding block to be a second group of first colour component neighboring reference values and second colour component neighboring reference values; and

determining, from the first colour component neighboring reference values of the

current coding block and the second colour component neighboring reference values of the current coding block, first colour component neighboring reference values at left side and upper side of the current coding block and second colour component neighboring reference values at left side and upper side of the current coding block to be a third group of first colour component neighboring reference values and second colour component neighboring reference values.

11. The method of claim 10, wherein before establishing the at least two computing models, the method further comprises at two of the following:

computing a first parameter and a second parameter of a first computing model according to the first group of first colour component neighboring reference values and second colour component neighboring reference values;

computing a first parameter and a second parameter of a second computing model according to the second group of first colour component neighboring reference values and second colour component neighboring reference values;

computing a first parameter and a second parameter of a third computing model according to the third group of first colour component neighboring reference values and second colour component neighboring reference values; and

wherein establishing the at least two computing models comprises:

establishing the first computing model, the second computing mode and/or the third computing mode according to the first parameter and the second parameter of the first computing model, the first parameter and the second parameter of the second computing model, and/or the first parameter and the second parameter of the third computing model.

12. The method of claim 1, wherein selecting the computing model corresponding to the current coding block from the at least two computing models comprises:

computing, according to a first colour component reconstructed value of at least one sample in the current coding block and the at least two computing models, each of rate-distortion cost values, corresponding to a respective one of the at least two computing models, of the current coding block; and

selecting, according to the computed at least two rate-distortion cost values, the computing model corresponding to the current coding block .

13. The method of claim 12, further comprising:

determining, based on the computed at least two rate-distortion cost values, at least one threshold.

14. The method of claim 13, wherein selecting, according to the computed at least two rate-distortion cost values, the computing model corresponding to the current coding block comprises:

comparing the computed at least two rate-distortion cost values with the at least one threshold to obtain select an optimal rate-distortion cost value from the at least two rate-distortion cost values; and

determining a computing mode corresponding to the optimal rate-distortion cost value to be the computing model corresponding to the current coding block.

15. The method of claim 1, further comprising:

after selecting the computing model corresponding to the current coding block, encoding the computing model corresponding to the current coding block into a bitstream.

16. The method of any one of claims 1 to 15, before establishing the at least two computing models according to the at least two groups of first colour component neighboring reference values and second colour component neighboring reference values, further comprising:

traversing the first colour component neighboring reference values of the current coding block, and screening the traversed first colour component neighboring reference values.

17. The method of claim 16, wherein screening the traversed first colour component neighboring reference values comprises:

selecting first colour component sampling values of to-be-removed pixels from the traversed first colour component neighboring reference values;

removing the selected first colour component sampling values from the first colour component neighboring reference values; and

removing second colour component sampling values of the to-be-removed pixels from

the second colour component neighboring reference values.

18. The method of claim 16, wherein screening the traversed first colour component neighboring reference values comprises:

selecting first colour component sampling values of to-be-removed pixels from the traversed first colour component neighboring reference values;

setting, in the first colour component neighboring reference values, a weighting coefficient for the selected first colour component sampling values to be equal to 0;and

setting, in the second colour component neighboring reference values, a weighting coefficient for second colour component sampling values of the to-be-removed pixels to be equal to 0.

19. The method of claim 16, wherein screening the traversed first colour component neighboring reference values comprises:

selecting first colour component sampling values of target pixels from the traversed first colour component neighboring reference values, and determining the selected first colour component sampling values as the first colour component neighboring reference values of the current coding block; and

selecting second colour component sampling values of the target pixels from the second colour component neighboring reference values, and determining the selected second colour component sampling values as the second colour component neighboring reference values of the current coding block.

20. A method for predicting a video colour component, applicable to a decoder, comprising:

determining at least two groups of first colour component neighboring reference values and second colour component neighboring reference values of a current coding block;

establishing at least two computing models according to the at least two groups of first colour component neighboring reference values and second colour component neighboring reference values;

determining a computing model corresponding to the current coding block from the at least two computing models; and

acquiring, according to the computing model corresponding to the current coding

block, a second colour component predicted value of at least one sample in the current coding block.

21. An apparatus for predicting a video colour component, applicable to an encoder, comprising: a grouping part, an establishing part, a selecting part and a first predicting part, wherein

the grouping part is configured to determine at least two groups of first colour component neighboring reference values and second colour component neighboring reference values of a current coding block;

the establishing part is configured to establish at least two computing models according to the at least two groups of first colour component neighboring reference values and second colour component neighboring reference values;

the selecting part is configured to select a computing model corresponding to the current coding block from the at least two computing models; and

the first predicting part is configured to acquire, according to the computing model corresponding to the current coding block, a second colour component predicted value of at least one sample in the current coding block.

22. The apparatus of claim 21, wherein the grouping part is further configured to:

sample neighboring reference values of a first colour component for the current coding block to acquire the first colour component neighboring reference values of the current coding block; and

sample neighboring reference values of a second colour component for the current coding block to acquire the second colour component neighboring reference values of the current coding block.

23. The apparatus of claim 22, wherein the operations of sampling at least comprises down-sampling.

24. The apparatus of claim 22, wherein the grouping part is specifically configured to:

acquire a first group of first colour component neighboring reference values and second colour component neighboring reference values from the first colour component

neighboring reference values of the current coding block and the second colour component neighboring reference values of the current coding block; and

acquire a second group of first colour component neighboring reference values and second colour component neighboring reference values from the first colour component neighboring reference values of the current coding block and the second colour component neighboring reference values of the current coding block.

25. The apparatus of claim 24, wherein the establishing part is specifically configured to:

compute a first parameter and a second parameter of a first computing model according to the first group of first colour component neighboring reference values and second colour component neighboring reference values;

compute a first parameter and a second parameter of a second computing model according to the second group of first colour component neighboring reference values and second colour component neighboring reference values; and

determine the first computing model according to the first parameter and the second parameter of the first computing model and determining the second computing model according to the first parameter and the second parameter of the second computing model.

26. The apparatus of claim 24, wherein the establishing part is further configured to:

determine a weighting coefficient for the first group of first colour component neighboring reference values and second colour component neighboring reference values; and

determine a weighting coefficient for the second group of first colour component neighboring reference values and second colour component neighboring reference values.

27. The apparatus of claim 26, wherein the establishing part is specifically configured to:

compute the first parameter and the second parameter of the first computing model according to the first group of first colour component neighboring reference values and second colour component neighboring reference values and a weighting coefficient for the first group of first colour component neighboring reference values and second colour component neighboring reference values;

compute the first parameter and the second parameter of the second computing model according to the second group of first colour component neighboring reference values and

second colour component neighboring reference values and a weighting coefficient for the second group of first colour component neighboring reference values and second colour component neighboring reference values; and

determine the first computing model according to the first parameter and the second parameter of the first computing model and determining the second computing model according to the first parameter and the second parameter of the second computing model.

28. The apparatus of claim 21, wherein the establishing part is specifically configured to:

in response to the first group of first colour component neighboring reference values being $L(m)$, the first group of second colour component neighboring reference values being $C(m)$, and the weighting coefficient for the first group of first colour component neighboring reference values and second colour component neighboring reference values being $w(m)$, compute the first parameter $\alpha 1$ and the second parameter $\beta 1$ of the first computing model according to $w(m)$, $L(m)$, $C(m)$ and an equation (1):

$$\begin{cases} \alpha 1 = \dfrac{\sum w(m) \cdot \sum (w(m) \cdot L(m) \cdot C(m)) - \sum (w(m) \cdot L(m)) \cdot \sum (w(m) \cdot C(m))}{\sum w(m) \cdot \sum (w(m) \cdot L(m) \cdot L(m)) - \sum (w(m) \cdot L(m)) \cdot \sum (w(m) \cdot L(m))} \\ \beta 1 = \dfrac{\sum (w(m) \cdot C(m)) - \alpha 1 \cdot \sum (w(m) \cdot L(m))}{\sum w(m)} \end{cases} \quad (1); \text{ and}$$

in response to the second group of first colour component neighboring reference values being $L(k)$, the second group of second colour component neighboring reference values being $C(k)$, and the weighting coefficient for the second group of first colour component neighboring reference values and second colour component neighboring reference values being $w(k)$, compute the first parameter $\alpha 2$ and the second parameter $\beta 2$ of the second computing model according to $w(k)$, $L(k)$, $C(k)$ and an equation (2):

$$\begin{cases} \alpha 2 = \dfrac{\sum w(k) \cdot \sum (w(k) \cdot L(k) \cdot C(k)) - \sum (w(k) \cdot L(k)) \cdot \sum (w(k) \cdot C(k))}{\sum w(k) \cdot \sum (w(k) \cdot L(k) \cdot L(k)) - \sum (w(k) \cdot L(k)) \cdot \sum (w(k) \cdot L(k))} \\ \beta 2 = \dfrac{\sum (w(k) \cdot C(k)) - \alpha 2 \cdot \sum (w(k) \cdot L(k))}{\sum w(k)} \end{cases} \quad (2).$$

29. The apparatus of claim 22, wherein the first colour component neighboring reference

values of the current coding block comprises at least one of the following: first colour component neighboring reference values at left side of the current coding block or first colour component neighboring reference values at upper side of the current coding block, and

the second colour component neighboring reference values of the current coding block comprises at least one of the following: second colour component neighboring reference values at left side of the current coding block or second colour component neighboring reference values at upper side of the current coding block.

30. The apparatus of claim 29, wherein the grouping part is specifically configured to perform at least two operations of the following:

determining, from the first colour component neighboring reference values of the current coding block and the second colour component neighboring reference values of the current coding block, the first colour component neighboring reference values at left side of the current coding block and the second colour component neighboring reference values at left side of the current coding block to be a first group of first colour component neighboring reference values and second colour component neighboring reference values;

determining, from the first colour component neighboring reference values of the current coding block and the second colour component neighboring reference values of the current coding block, the first colour component neighboring reference values at upper side of the current coding block and the second colour component neighboring reference values at upper side of the current coding block to be a second group of first colour component neighboring reference values and second colour component neighboring reference values; and

determining, from the first colour component neighboring reference values of the current coding block and the second colour component neighboring reference values of the current coding block, first colour component neighboring reference values at left side and upper side of the current coding block and second colour component neighboring reference values at left side and upper side of the current coding block to be a third group of first colour component neighboring reference values and second colour component neighboring reference values.

31. The apparatus of claim 30, wherein the establishing part is specifically configured to perform at least two operations of the following:

computing a first parameter and a second parameter of a first computing model according to the first group of first colour component neighboring reference values and second colour component neighboring reference values;

computing a first parameter and a second parameter of a second computing model according to the second group of first colour component neighboring reference values and second colour component neighboring reference values; and

computing a first parameter and a second parameter of a third computing model according to the third group of first colour component neighboring reference values and second colour component neighboring reference values; and

wherein the establishing part is specifically configured to:

establish the first computing model, the second computing mode and/or the third computing mode according to the first parameter and the second parameter of the first computing model, the first parameter and the second parameter of the second computing model, and/or the first parameter and the second parameter of the third computing model.

32. The apparatus of claim 21, wherein the selecting part is specifically configured to:

compute, according to a first colour component reconstructed value of at least one sample in the current coding block and the at least two computing models, each of rate-distortion cost values, corresponding to a respective one of the at least two computing models, of the current coding block; and

select, according to the computed at least two rate-distortion cost values, the computing model corresponding to the current coding block .

33. The apparatus of claim 32, wherein the apparatus further comprises a determining part and the determining part is configured to:

determine, based on the computed at least two rate-distortion cost values, at least one threshold.

34. The apparatus of claim 33, wherein the selecting part is specifically configured to:

compare the computed at least two rate-distortion cost values with the at least one threshold to obtain select an optimal rate-distortion cost value from the at least two rate-distortion cost values; and

determine a computing mode corresponding to the optimal rate-distortion cost value to be the computing model corresponding to the current coding block.

35. The apparatus of claim 21, wherein the apparatus further comprises an encoding part and the encoding part is configured to:

after the selecting part selects the computing model corresponding to the current coding block, encoding the computing model corresponding to the current coding block into a bitstream.

36. The apparatus of any one of claims 21 to 35, wherein the establishing part is specifically configured to:

traverse the first colour component neighboring reference values of the current coding block, and screen the traversed first colour component neighboring reference values.

37. The apparatus of claim 36, wherein the establishing part is specifically configured to:

select first colour component sampling values of to-be-removed pixels from the traversed first colour component neighboring reference values;

remove the selected first colour component sampling values from the first colour component neighboring reference values; and

remove second colour component sampling values of the to-be-removed pixels from the second colour component neighboring reference values.

38. The apparatus of claim 36, wherein the establishing part is specifically configured to:

select first colour component sampling values of to-be-removed pixels from the traversed first colour component neighboring reference values;

set, in the first colour component neighboring reference values, a weighting coefficient for the selected first colour component sampling values to be equal to 0;and

set, in the second colour component neighboring reference values, a weighting coefficient for second colour component sampling values of the to-be-removed pixels to be equal to 0.

39. The apparatus of claim 36, wherein the establishing part is specifically configured to:

select first colour component sampling values of target pixels from the traversed first colour component neighboring reference values, and determining the selected first colour component sampling values as the first colour component neighboring reference values of the current coding block; and

select second colour component sampling values of the target pixels from the second colour component neighboring reference values, and determining the selected second colour component sampling values as the second colour component neighboring reference values of the current coding block.

40. A device for predicting a video colour component, applicable to an encoder, comprising: a network interface, a memory, and a processor, wherein

the network interface is configured to receive and send signals in a process of receiving and sending information with other external network elements;

the memory is configured to store computer programs capable of running in the processor; and

when the computer programs are run by the processor, the processor is configured to implement any one of the claims 1-19.

41. An apparatus for predicting a video colour component, applicable to a decoder, comprising: a grouping part, an establishing part, a selecting part and a first predicting part, wherein

the grouping part is configured to determine at least two groups of first colour component neighboring reference values and second colour component neighboring reference values of a current coding block;

the establishing part is configured to establish at least two computing models according to the at least two groups of first colour component neighboring reference values and second colour component neighboring reference values;

the selecting part is configured to select a computing model corresponding to the current coding block from the at least two computing models; and

the first predicting part is configured to acquire, according to the computing model corresponding to the current coding block, a second colour component predicted value of at least one sample in the current coding block.