

CLAIMS

1. A picture component prediction method, applied to a decoder, the method comprising:

~~determining~~acquiring a first picture component reference value set of a current block;

determining multiple first picture component reference values ~~from~~according to the first picture component reference value set, wherein the multiple first picture component reference values include four reference values corresponding to four preset sample positions, respectively;

performing first filtering processing on sample values of samples corresponding to the multiple first picture component reference values, respectively, to ~~obtain~~determine multiple filtered first picture reference sample values, wherein the first filtering processing is performed on the sample values of the samples corresponding to the multiple first picture component reference values to obtain a filtered reference value set, and wherein reference sample values in the filtered reference value set are compared, and wherein a set of greater first picture component reference values and a set of smaller first picture component reference values are determined based on the reference sample values, wherein the multiple filtered first picture reference sample values are determined by using multiple values from each of the set of greater first picture component reference values and the set of smaller first picture component reference values;

~~determining to be predicted picture component reference values corresponding to the multiple filtered first picture reference sample values, a to-be-predicted picture component being a picture component different from a first picture component;~~

determining a parameter of a component linear model according to the multiple filtered first picture reference sample values and a corresponding~~the~~ to-be-predicted picture component reference values, the to-be-predicted picture component being a picture component which is different from the first picture component, and the component linear model characterizing a linear mapping relationship for mapping a sample value of the first picture component to a sample value of the to-be-predicted picture component;

performing mapping processing on a reconstructed value of the first picture component of the current block according to the component linear model to obtain a mapped value; and

determining a predicted value of the to-be-predicted picture component of the current block according to the mapped value.

2. The method of claim 1, wherein determining the first picture component reference value set of a current block comprises:

determining one or more reference samples that locate outside of the current block, and determining the one or more reference samples as the first picture component reference value set,

wherein determining the one or more reference samples that locate outside of the current block comprises:

determining neighboring samples of the current block as one or more reference samples.

3. The method of claim 2, wherein the neighboring samples of the current block comprise at least one of: samples in one or more neighboring lines at a top side of the current block, or samples in one or more neighboring columns at a left side of the current block.

42. The method of claim 34, wherein determining the multiple first picture component reference values ~~from~~ according to the first picture component reference value set comprises:

selecting two reference samples from the samples in the one or more neighboring lines at the top side of the current block according to a preset position, and selecting two reference samples from the samples in the one or more neighboring columns at the left side of the current block according to a preset position;

determining the multiple first picture component reference values according to the four selected samples.

~~comparing reference values in the first picture component reference value set to determine a maximum first picture component reference value and a minimum first picture component reference value.~~

~~3. The method of claim 2, wherein performing first filtering processing on the sample values of the samples corresponding to the multiple first picture component reference values, respectively, to obtain the multiple filtered first picture reference sample values comprises:~~

~~performing first filtering processing on the sample values of the samples corresponding to the maximum first picture component reference value and the minimum first picture component reference value, respectively, to obtain a filtered maximum first picture component reference value and a filtered minimum first picture component reference value.~~

5. The method of claim 1, wherein determining the multiple filtered first picture reference sample values based on the set of greater first picture component reference values and set of smaller first picture component reference values comprises:

performing mean processing on the set of greater first picture component reference values to obtain a filtered maximum first picture component reference value; and

performing mean processing on the set of smaller first picture component reference values to obtain a filtered minimum first picture component reference value.

6. The method of claim 5, further comprising:

determining a maximum to-be-predicted picture component reference value corresponding to the filtered maximum first picture component reference value and a minimum to-be-predicted picture component reference value corresponding to the filtered minimum first picture component reference value.

7. The method of claim 6, wherein determining the parameter of the component linear model according to the multiple filtered first picture reference sample values and a corresponding to-be-predicted picture component reference values comprises:

determining the parameter of the component linear model according to the filtered maximum first picture component reference value, the maximum to-be-predicted picture component reference value, the filtered minimum first picture component reference value and the minimum to-be-predicted picture component reference value, the component linear model characterizing the linear mapping relationship for mapping the sample value of the first picture component to the sample value of the to-be-predicted picture component.

8. The method of claim 7, wherein determining the parameter of the component linear model according to the filtered maximum first picture component reference value, the maximum to-be-predicted picture component reference value, the filtered minimum first picture component reference value and the minimum to-be-predicted picture component reference value comprises:

constructing a first sub component linear model by using the filtered maximum first picture component reference value, the maximum to-be-predicted picture component reference value and a preset initial linear model;

constructing a second sub component linear model by using the filtered minimum first picture component reference value, the minimum to-be-predicted picture component reference value and the preset initial linear model;

obtaining a model parameter based on the first sub component linear model and the second sub component linear model; and

constructing the component linear model by using the model parameter and the preset initial linear model.

9. The method of claim 7, wherein determining the parameter of the component linear model

according to the filtered maximum first picture component reference value, the maximum to-be-predicted picture component reference value, the filtered minimum first picture component reference value and the minimum to-be-predicted picture component reference value comprises:

the parameter of the component linear model comprises a multiplicative factor and an additive offset;

calculating a first difference value between the maximum to-be-predicted picture component reference value and the minimum to-be-predicted picture component reference value;

calculating a second difference value between the maximum first picture component reference value and the minimum first picture component reference value;

setting the multiplicative factor to be a ratio of the first difference value to the second difference value; and

calculating a first product between the maximum first picture component reference value and the multiplicative factor and setting the additive offset to be a difference value between the maximum to-be-predicted picture component reference value and the first product; or calculating a second product between the minimum first picture component reference value and the multiplicative factor and setting the additive offset to be a difference value between the minimum to-be-predicted picture component reference value and the second product.

10. The method of claim 6, wherein determining the maximum to-be-predicted picture component reference value corresponding to the filtered maximum first picture component reference value and the minimum to-be-predicted picture component reference value corresponding to the filtered minimum first picture component reference value comprises:

acquiring to-be-predicted picture component reference values of the reference samples in the set of greater first picture component reference values and to-be-predicted picture component reference values of the reference samples in the set of smaller first picture

component reference values;

performing meaning processing on the to-be-predicted picture component reference values of the reference samples in the set of greater first picture component reference values, and determining the maximum to-be-predicted picture component reference value; and

performing meaning processing on the to-be-predicted picture component reference values of the reference samples in the set of smaller first picture component reference values, and determining minimum to-be-predicted picture component reference value.

11. The method of claim 10, further comprising:

performing fourth filtering processing on the to-be-predicted picture component reference value to obtain a reconstructed value of the to-be-predicted picture component;

wherein fourth filtering processing is low-pass filtering.

12. The method of claim 10, further comprising:

converting a first picture component reference value sample position corresponding to the filtered maximum first picture component reference value into a first sample position;

setting the maximum to-be-predicted picture component reference value to be a reference value of the to-be-predicted picture component reference values which is at the first sample position;

converting a first picture component reference value sample position corresponding to the filtered minimum first picture component reference value into a second sample position;
and

setting the minimum to-be-predicted picture component reference value to be a reference value of the to-be-predicted picture component reference values which is at the second sample position.

13. The method of claim 1, wherein a number of sample values in the set of greater first picture component reference values is an integer which is equal to or greater than 1, and a number of sample values in the set of smaller first picture component reference values is an integer which is equal to or greater than 1,

wherein the number of sample values in the set of greater first picture component reference values is 2, and a number of sample values in the set of smaller first picture component reference values is 2.

~~4. The method of claim 3, wherein determining the to-be-predicted picture component reference values corresponding to the multiple filtered first picture component reference values comprises:~~

~~determining a maximum to-be-predicted picture component reference value corresponding to the filtered maximum first picture component reference value and a minimum to-be-predicted picture component reference value corresponding to the filtered minimum first picture component reference value.~~

~~5. The method of claim 4, wherein determining the parameter of the component linear model according to the multiple filtered first picture reference sample values and the to-be-predicted picture component reference values comprises:~~

~~determining the parameter of the component linear model according to the filtered maximum first picture component reference value, the maximum to-be-predicted picture component reference value, the filtered minimum first picture component reference value and the minimum to-be-predicted picture component reference value, the component linear model characterizing the linear mapping relationship for mapping the sample value of the first picture component to the sample value of the to-be-predicted picture component.~~

~~6. The method of claim 1, wherein acquiring the first picture component reference value set of the current block comprises:~~

~~determining one or more reference samples outside the current block, and determining the one or more reference samples as one or more first picture component reference values.~~

~~7. The method of claim 6, wherein determining the one or more reference samples outside the current block comprises:~~

~~determining neighbouring samples of the current block as the one or more reference samples.~~

~~8~~14. The method of claim 1, wherein performing mapping processing on the reconstructed value of the first picture component of the current block according to the component linear model to obtain the mapped value comprises:

performing second filtering processing on the reconstructed value of the first picture component to obtain a second filtered value of the reconstructed value of the first picture component; and

performing mapping processing on the second filtered value according to the component linear model to obtain the mapped value;

~~9. The method of claim 8, wherein~~

second filtering processing is down-sampling filtering or low-pass filtering.

~~10~~15. The method of claim 1, wherein determining the predicted value of the to-be-predicted picture component of the current block according to the mapped value comprises:

setting the mapped value as the predicted value of the to-be-predicted picture component of the current block.

~~11~~16. The method of claim 1, wherein determining the predicted value of the to-be-predicted

picture component of the current block according to the mapped value comprises:

performing third filtering processing on the mapped value to obtain a third filtered value of the mapped value; and

setting the third filtered value as the predicted value of the to-be-predicted picture component of the current block;

~~12. The method of claim 11, wherein~~

~~third filtering processing is low-pass filtering.~~

~~13. The method of claim 4, wherein determining the maximum to-be-predicted picture component reference value corresponding to the filtered maximum first picture component reference value and the minimum to-be-predicted picture component reference value corresponding to the filtered minimum first picture component reference value comprises:~~

~~acquiring to-be-predicted picture component reference values of the current block; and~~

~~determining the maximum to-be-predicted picture component reference value and minimum to-be-predicted picture component reference value of the to-be-predicted picture component reference values.~~

~~14. The method of claim 13, further comprising:~~

~~performing fourth filtering processing on the to-be-predicted picture component reference value to obtain a reconstructed value of the to-be-predicted picture component.~~

~~15. The method of claim 14, wherein~~

~~fourth filtering processing is low-pass filtering.~~

~~16. The method of any one of claims 13-15, wherein determining the maximum to-be-predicted picture component reference value and minimum to-be-predicted picture component reference value of the to-be-predicted picture component reference values comprises:~~

~~converting a first picture component reference value sample position corresponding to the maximum first picture component reference value into a first sample position;~~

~~setting the maximum to-be-predicted picture component reference value to be a reference value of the to-be-predicted picture component reference values which is at the first sample position;~~

~~converting a first picture component reference value sample position corresponding to the minimum first picture component reference value into a second sample position; and~~

~~setting the minimum to-be-predicted picture component reference value to be a reference value of the to-be-predicted picture component reference values which is at the second sample position.~~

~~17. The method of claim 5, wherein determining the parameter of the component linear model according to the filtered maximum first picture component reference value, the maximum to-be-predicted picture component reference value, the filtered minimum first picture component reference value and the minimum to-be-predicted picture component reference value comprises:~~

~~constructing a first sub-component linear model by using the filtered maximum first picture component reference value, the maximum to-be-predicted picture component reference value and a preset initial linear model;~~

~~constructing a second sub-component linear model by using the filtered minimum first picture component reference value, the minimum to-be-predicted picture component reference value and the preset initial linear model;~~

~~obtaining a model parameter based on the first sub-component linear model and the second sub-component linear model; and~~

~~constructing the component linear model by using the model parameter and the preset initial linear model.~~

~~18. The method of claim 5, wherein determining the parameter of the component linear model according to the filtered maximum first picture component reference value, the maximum to-be-predicted picture component reference value, the filtered minimum first picture component reference value and the minimum to-be-predicted picture component reference value comprises:~~

~~the parameter of the component linear model comprises a multiplicative factor and an additive offset;~~

~~calculating a first difference value between the maximum to-be-predicted picture component reference value and the minimum to-be-predicted picture component reference value;~~

~~calculating a second difference value between the maximum first picture component reference value and the minimum first picture component reference value;~~

~~setting the multiplicative factor to be a ratio of the first difference value to the second difference value; and~~

~~calculating a first product between the maximum first picture component reference value and the multiplicative factor and setting the additive offset to be a difference value between the maximum to-be-predicted picture component reference value and the first product; or calculating a second product between the minimum first picture component reference value and the multiplicative factor and setting the additive offset to be a difference value between the minimum to-be-predicted picture component reference value and the second product.~~

~~19~~17. The method of claim 1, ~~further comprising that~~wherein

the first picture component is a luma component, and the to-be-predicted picture

component is a first or second chroma component; or

the first picture component is the first chroma component, and the to-be-predicted picture component is the luma component or the second chroma component; or

the first picture component is the second chroma component, and the to-be-predicted picture component is the luma component or the first chroma component; or

the first picture component is a first colour component, and the to-be-predicted picture component is a second colour component or a third colour component; or

the first picture component is the second colour component, and the to-be-predicted picture component is the first colour component or the third colour component; or

the first picture component is the third colour component, and the to-be-predicted picture component is the second colour component or the first colour component;

~~20. The method of claim 19, further comprising that: wherein~~

the first colour component is a red component, the second colour component is a green component, and the third colour component is a blue component.

~~21~~18. The method of claim 1, wherein

first filtering processing is down-sampling filtering or low-pass filtering.

19. A picture component prediction method, applied to an encoder, the method comprising:

determining a first picture component reference value set of a current block;

determining multiple first picture component reference values according to the first picture component reference value set, wherein the multiple first picture component reference values include four reference values corresponding to four preset sample positions, respectively;

performing first filtering processing on sample values of samples corresponding to the multiple first picture component reference values, respectively, to determine multiple filtered first picture reference sample values, wherein the first filtering processing is performed on the sample values of the samples corresponding to the multiple first picture component reference values to obtain a filtered reference value set, and wherein reference sample values in the filtered reference value set are compared, and wherein a set of greater first picture component reference values and a set of smaller first picture component reference values are determined based on the reference sample values, and wherein the multiple filtered first picture reference sample values are determined by using multiple values from each of the set of greater first picture component reference values and the set of smaller first picture component reference values;

determining a parameter of a component linear model according to the multiple filtered first picture reference sample values and a corresponding to-be-predicted picture component reference values, the to-be-predicted picture component being a picture component which is different from the first picture component, and the component linear model characterizing a linear mapping relationship for mapping a sample value of the first picture component to a sample value of the to-be-predicted picture component;

performing mapping processing on a reconstructed value of the first picture component of the current block according to the component linear model to obtain a mapped value; and

determining a predicted value of the to-be-predicted picture component of the current block according to the mapped value.

20. A video component prediction device, applied to a decoder, the device comprising:

a memory for storing executable video component prediction instructions;

a processor for executing the executable video component prediction instructions stored in the memory to perform operations of:

determining a first picture component reference value set of a current block;

determining multiple first picture component reference values according to the first picture component reference value set, wherein the multiple first picture component reference values include four reference values corresponding to four preset sample positions, respectively;

performing first filtering processing on sample values of samples corresponding to the multiple first picture component reference values, respectively, to determine multiple filtered first picture reference sample values, wherein the first filtering processing is performed on the sample values of the samples corresponding to the multiple first picture component reference values to obtain a filtered reference value set, and wherein reference sample values in the filtered reference value set are compared, and wherein a set of greater first picture component reference values and a set of smaller first picture component reference values are determined based on the reference sample values, and wherein the multiple filtered first picture reference sample values are determined by using multiple values from each of the set of greater first picture component reference values and the set of smaller first picture component reference values;

determining a parameter of a component linear model according to the multiple filtered first picture reference sample values and a corresponding to-be-predicted picture component reference values, the to-be-predicted picture component being a picture component which is different from the first picture component, and the component linear model characterizing a linear mapping relationship for mapping a sample value of the first picture component to a sample value of the to-be-predicted picture component;

performing mapping processing on a reconstructed value of the first picture component of the current block according to the component linear model to obtain a mapped value; and

determining a predicted value of the to-be-predicted picture component of the current block according to the mapped value.

21. The device of claim 20, wherein determining the first picture component reference value

set of a current block comprises:

determining one or more reference samples that locate outside of the current block, and determining the one or more reference samples as the first picture component reference value set.

22. The device of claim 21, wherein determining the one or more reference samples that locate outside of the current block comprises:

determining neighboring samples of the current block as one or more reference samples.

23. The device of claim 22, wherein determining the multiple first picture component reference values according to the first picture component reference value set comprises:

selecting two reference samples from the samples in the one or more neighboring lines at the top side of the current block according to a preset position, and selecting two reference samples from the samples in the one or more neighboring columns at the left side of the current block according to a preset position;

determining the multiple first picture component reference values according to the four selected samples.

24. The device of claim 20, wherein determining the multiple filtered first picture reference sample values based on the set of greater first picture component reference values and set of smaller first picture component reference values comprises:

performing mean processing on the set of greater first picture component reference values to obtain a filtered maximum first picture component reference value; and

performing mean processing on the set of smaller first picture component reference

values to obtain a filtered minimum first picture component reference value.

25. The device of claim 24, further comprising:

determining a maximum to-be-predicted picture component reference value corresponding to the filtered maximum first picture component reference value and a minimum to-be-predicted picture component reference value corresponding to the filtered minimum first picture component reference value.

26. The device of claim 25, wherein determining the parameter of the component linear model according to the multiple filtered first picture reference sample values and a corresponding to-be-predicted picture component reference values comprises:

determining the parameter of the component linear model according to the filtered maximum first picture component reference value, the maximum to-be-predicted picture component reference value, the filtered minimum first picture component reference value and the minimum to-be-predicted picture component reference value, the component linear model characterizing the linear mapping relationship for mapping the sample value of the first picture component to the sample value of the to-be-predicted picture component.

27. The device of claim 20, wherein a number of sample values in the set of greater first picture component reference values is an integer which is equal to or greater than 1, and a number of sample values in the set of smaller first picture component reference values is an integer which is equal to or greater than 1,

wherein the number of sample values in the set of greater first picture component reference values is 2, and a number of sample values in the set of smaller first picture component reference values is 2.

28. A video component prediction device, applied to a decoder, the device comprising:

a memory for storing executable video component prediction instructions;

a processor for executing the executable video component prediction instructions stored in the memory to perform operations of:

determining a first picture component reference value set of a current block;

determining multiple first picture component reference values according to the first picture component reference value set, wherein the multiple first picture component reference values include four reference values corresponding to four preset sample positions, respectively;

performing first filtering processing on sample values of samples corresponding to the multiple first picture component reference values, respectively, to determine multiple filtered first picture reference sample values, wherein the first filtering processing is performed on the sample values of the samples corresponding to the multiple first picture component reference values to obtain a filtered reference value set, and wherein reference sample values in the filtered reference value set are compared, and wherein a set of greater first picture component reference values and a set of smaller first picture component reference values are determined based on the reference sample values, and wherein the multiple filtered first picture reference sample values are determined by using multiple values from each of the set of greater first picture component reference values and the set of smaller first picture component reference values;

determining a parameter of a component linear model according to the multiple filtered first picture reference sample values and a corresponding to-be-predicted picture component reference values, the to-be-predicted picture component being a picture component which is different from the first picture component, and the component linear model characterizing a linear mapping relationship for mapping a sample value of the first picture component to a sample value of the to-be-predicted picture component;

performing mapping processing on a reconstructed value of the first picture component of the current block according to the component linear model to obtain a mapped

value; and

determining a predicted value of the to-be-predicted picture component of the current block according to the mapped value.

22. A video component prediction device, comprising:

~~an acquisition part, configured to acquire a first picture component reference value set of a current block;~~

~~a determination part, configured to determine multiple first picture component reference values from the first picture component reference value set;~~

~~a filtering part, configured to perform first filtering processing on sample values of samples corresponding to the multiple first picture component reference values, respectively, to obtain multiple filtered first picture reference sample values;~~

~~wherein the determination part is further configured to determine to-be-predicted picture component reference values corresponding to the multiple filtered first picture reference sample values, a to-be-predicted picture component being a picture component different from a first picture component, and determine a parameter of a component linear model according to the multiple filtered first picture reference sample values and the to-be-predicted picture component reference values, the component linear model characterizing a linear mapping relationship for mapping a sample value of the first picture component to a sample value of the to-be-predicted picture component, and~~

~~the filtering part is further configured to perform mapping processing on a reconstructed value of the first picture component of the current block according to the component linear model to obtain a mapped value; and~~

~~a prediction part, configured to determine a predicted value of the to-be-predicted picture component of the current block according to the mapped value.~~

23. The device of claim 22, wherein

~~the determination part is further configured to compare reference values in the first picture component reference value set to determine a maximum first picture component reference value and a minimum first picture component reference value.~~

24. The device of claim 23, wherein

~~the filtering part is further configured to perform first filtering processing on the sample values of the samples corresponding to the maximum first picture component reference value and the minimum first picture component reference value, respectively, to obtain a filtered maximum first picture component reference value and a filtered minimum first picture component reference value.~~

25. The device of claim 24, wherein

~~the determination part is further configured to determine a maximum to-be-predicted picture component reference value corresponding to the filtered maximum first picture component reference value and a minimum to-be-predicted picture component reference value corresponding to the filtered minimum first picture component reference value.~~

26. The device of claim 25, wherein

~~the determination part is further configured to determine the parameter of the component linear model according to the filtered maximum first picture component reference value, the maximum to-be-predicted picture component reference value, the filtered minimum first picture component reference value and the minimum to-be-predicted picture component reference value, the component linear model characterizing the linear mapping relationship for mapping the sample value of the first picture component to the sample value of the to-be-predicted picture component.~~

27. The device of claim 22, wherein

~~the determination part is further configured to determine one or more reference samples outside the current block; and~~

~~the acquisition part is further configured to determine the one or more reference samples as one or more first picture component reference values.~~

28. The device of claim 27, wherein

~~the determination part is further configured to determine neighbouring samples of the current block as the one or more reference samples.~~

29. The device of claim 22, wherein

~~the filtering part is further configured to perform second filtering processing on the reconstructed value of the first picture component to obtain a second filtered value of the reconstructed value of the first picture component and perform mapping processing on the second filtered value according to the component linear model to obtain the mapped value.~~

30. The device of claim 29, wherein

~~second filtering processing is down-sampling filtering or low-pass filtering.~~

31. The device of claim 22, wherein

~~the prediction part is further configured to set the mapped value as the predicted value of the to-be-predicted picture component of the current block.~~

32. The device of claim 22, wherein

~~the filtering part is further configured to perform third filtering processing on the~~

~~mapped value to obtain a third filtered value of the mapped value; and~~

~~the prediction part is further configured to set the third filtered value as the predicted value of the to-be-predicted picture component of the current block.~~

~~33. The device of claim 32, wherein~~

~~third filtering processing is low-pass filtering.~~

~~34. The device of claim 25, wherein~~

~~the determination part is further configured to determine to-be-predicted picture component reference values of the current block and determine the maximum to-be-predicted picture component reference value and minimum to-be-predicted picture component reference value of the to-be-predicted picture component reference values.~~

~~35. The device of claim 34, wherein~~

~~the filtering part is further configured to perform fourth filtering processing on the to-be-predicted picture component reference value to obtain a reconstructed value of the to-be-predicted picture component.~~

~~36. The device of claim 35, wherein~~

~~fourth filtering processing is low-pass filtering.~~

~~37. The device of any one of claims 34-36, wherein~~

~~the determination part is further configured to convert a first picture component reference value sample position corresponding to the maximum first picture component reference value into a first sample position, set the maximum to-be-predicted picture~~

~~component reference value to be a reference value of the to-be-predicted picture component reference values which is at the first sample position, convert a first picture component reference value sample point corresponding to the minimum first picture component reference value into a second sample position and set the minimum to-be-predicted picture component reference value to be a reference value of the to-be-predicted picture component reference values which is at the second sample position.~~

38. The device of claim 26, wherein

~~the determination part is further configured to construct a first sub-component linear model by using the filtered maximum first picture component reference value, the maximum to-be-predicted picture component reference value and a preset initial linear model, construct a second sub-component linear model by using the filtered minimum first picture component reference value, the minimum to-be-predicted picture component reference value and the preset initial linear model, obtain a model parameter based on the first sub-component linear model and the second sub-component linear model and construct the component linear model by using the model parameter and the preset initial linear model.~~

39. The device of claim 26, wherein

~~the determination part is further configured to determine that the parameter of the component linear model comprises a multiplicative factor and an additive offset, calculate a first difference value between the maximum to-be-predicted picture component reference value and the minimum to-be-predicted picture component reference value, calculate a second difference value between the maximum first picture component reference value and the minimum first picture component reference value, set the multiplicative factor to be a ratio of the first difference value to the second difference value, calculate a first product between the maximum first picture component reference value and the multiplicative factor and set the additive offset to be a difference value between the maximum to-be-predicted picture component reference value and the first product, or calculate a second product between the minimum first picture component reference value and the multiplicative factor and set the~~

~~additive offset to be a difference value between the minimum to-be-predicted picture component reference value and the second product.~~

~~40. The device of claim 22, wherein~~

~~the first picture component is a luma component, and the to-be-predicted picture component is a first or second chroma component; or~~

~~the first picture component is the first chroma component, and the to-be-predicted picture component is the luma component or the second chroma component; or~~

~~the first picture component is the second chroma component, and the to-be-predicted picture component is the luma component or the first chroma component; or~~

~~the first picture component is a first colour component, and the to-be-predicted picture component is a second colour component or a third colour component; or~~

~~the first picture component is the second colour component, and the to-be-predicted picture component is the first colour component or the third colour component; or~~

~~the first picture component is the third colour component, and the to-be-predicted picture component is the second colour component or the first colour component.~~

~~41. The device of claim 40, wherein~~

~~the first colour component is a red component, the second colour component is a green component, and the third colour component is a blue component.~~

~~42. The device of claim 22, wherein~~

~~first filtering processing is down-sampling filtering or low-pass filtering.~~

~~43. A video component prediction device, comprising:~~

~~a memory, configured to store executable video component prediction instructions;~~
and

~~a processor, configured to execute the executable video component prediction instructions stored in the memory to implement the method of any one of claims 1-21.~~

~~44. A computer-readable storage medium having stored executable video component prediction instructions that when executed by a processor, cause the processor to implement the method of any one of claims 1-21.~~