Kirchhoffer, Haricharan Lakshman, Detlev Marpe, Simon Oudin, Matthias Preiss, Heiko Schwarz, Mischa Siekmann, Karsten Suehring, and Thomas Wiegand, "Description of video coding technology proposed by Fraunhofer HHI," JCTVC-A116, April, 2010

SUMMARY OF THE INVENTION

PROBLEMS TO BE SOLVED BY THE INVENTION

[0013]

However, these techniques illustrate processes in the same view only and cannot perform inter-view vector prediction in the case of multi-view encoding. Thus, encoding efficiency may decrease.

[0014]

Embodiments of the present invention are made in view of the situations, and aim to suppress a decrease in the encoding efficiency.

SOLUTIONS TO PROBLEMS

[0014a]

According to a first aspect of the present invention, there is provided an image processing device including: a predictive motion vector generating unit that sets a co-located block to be not available when a type of a reference picture of a current block is different from a type of the reference picture of a co-located block included in a co-located picture when encoding a current motion vector of the current block used in prediction using correlation in a temporal direction and generates a predictive motion vector of the current motion vector using a reference motion vector referred when generating the predictive motion vector; and a reconstructing unit that reconstructs the current motion vector by adding the predictive motion vector generated by the predictive motion vector

generating unit to a difference vector between the current motion vector and the predictive motion vector.

[0014b]

According to a second aspect of the present invention, there is provided an image processing method of an image processing device, for allowing the image processing device to execute the steps of: setting a co-located block to be not available when a type of a reference picture of a current block is different from a type of the reference picture of a co-located block included in a co-located picture when encoding a current motion vector of the current block used in prediction using correlation in a temporal direction, and generating a predictive motion vector of the current motion vector using a reference motion vector referred when generating the predictive motion vector; and reconstructing the current motion vector by adding the generated predictive motion vector to a difference motion vector between the current motion vector and the predictive motion vector.

[0015]

Disclosed herein is an image processing device including: a predictive vector generating unit that generates a predictive vector of a current parallax vector of a current block used in prediction using correlation in a parallax direction using a reference parallax vector referred when generating a predictive motion vector, when encoding the current parallax vector; and a difference vector generating unit that generates a difference vector between the current parallax vector and the predictive vector generated by the predictive vector generating unit.

[0016]

The predictive vector generating unit may generate a predictive vector of the current parallax vector using a parallax vector of a co-located block included in a co-located

Claims:

1. An image processing device comprising:

a predictive motion vector generating unit that sets a co-located block to be not available when a type of a reference picture of a current block is different from a type of the reference picture of a co-located block included in a co-located picture when encoding a current motion vector of the current block used in prediction using correlation in a temporal direction and generates a predictive motion vector of the current motion vector using a reference motion vector referred when generating the predictive motion vector; and

a reconstructing unit that reconstructs the current motion vector by adding the predictive motion vector generated by the predictive motion vector generating unit to a difference vector between the current motion vector and the predictive motion vector.

2. The image processing device according to claim 1, wherein

the predictive motion vector generating unit sets the co-located block to be not available when the type of the reference picture of the current block is a long-term reference picture and the type of the reference picture of the co-located block is a short-term reference picture.

3. The image processing device according to claim 1, wherein

the predictive motion vector generating unit sets the co-located block to be not available when the type of the reference picture of the current block is a short-term reference picture and the type of the reference picture of the co-located block is a long-term reference picture.

4. The image processing device according to claim 1, wherein

the predictive motion vector generating unit generates the predictive motion vector of the current motion vector using the reference motion vector referred when generating the predictive motion vector, when encoding the current motion vector of the current block used in prediction using correlation

in a temporal direction, and

the reconstructing unit reconstructs the current motion vector by adding a difference motion vector between the current motion vector and the predictive motion vector to the predictive motion vector generated by the predictive motion vector generating unit.

5. The image processing device according to claim 1, wherein

the predictive motion vector generating unit generates the predictive motion vector of the current motion vector using a motion vector of a reference block included in a picture of a time different from the current picture of the same view as the current view.

6. The image processing device according to claim 5, wherein

the predictive motion vector generating unit scales the reference motion vector based on a positional relationship between the current picture and the reference picture referred when generating the predictive motion vector to generate the predictive motion vector of the current motion vector.

7. An image processing method of an image processing device, for allowing the image processing device to execute the steps of:

setting a co-located block to be not available when a type of a reference picture of a current block is different from a type of the reference picture of a co-located block included in a co-located picture when encoding a current motion vector of the current block used in prediction using correlation in a temporal direction, and generating a predictive motion vector of the current motion vector using a reference motion vector referred when generating the predictive motion vector; and

reconstructing the current motion vector by adding the generated predictive motion vector to a difference motion vector between the current motion vector and the predictive motion vector.

8. The image processing method according to claim 7, wherein the step of generating the predictive motion vector generating unit comprises

setting the co-located block to be not available when the type of the reference picture of the current block is a long-term reference picture and the type of the reference picture of the co-located block is a short-term reference picture.

9. The image processing method according to claim 7, wherein the step of generating the predictive motion vector generating unit comprises

setting the co-located block to be not available when the type of the reference picture of the current block is a short-term reference picture and the type of the reference picture of the co-located block is a long-term reference picture.

10. The image processing method according to claim 7, wherein the step of generating the predictive motion vector generating unit comprises

generating a predictive motion vector of the current motion vector using the reference motion vector referred when generating the predictive motion vector, when encoding the current motion vector of the current block used in prediction using correlation in a temporal direction, and wherein the step of reconstructing the current motion vector comprises

adding the difference motion vector between the current motion vector and the predictive motion vector to the predictive motion vector generated by the predictive motion vector generating step.

11. The image processing method according to claim 7, wherein the step of generating the predictive motion vector comprises

generating the predictive motion vector of the current motion vector using a motion vector of a reference block included in a picture of a time different from the current picture of the same view as the current view.

12. The image processing method according to claim 11, wherein the step of generating the predictive motion vector comprises

scaling the reference motion vector based on a positional relationship between the current picture and the reference picture referred when generating the predictive motion vector to generate the predictive motion vector of the current motion vector.