CLAIMS

1. An image processing device comprising:

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,

wherein the predictive vector generating unit generates a predictive vector of the current parallax vector using a parallax vector of a co-located block included in a co-located picture of a time different from a current picture of the same view as a current view; and

wherein the predictive vector generating unit sets the co-located block to be not available when a property of the vector of the current block is different from a property of the vector of the co-located block.

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

~~the predictive vector generating unit generates a predictive vector of the current parallax vector using a parallax vector of a co-located block included in a co-located picture of a time different from a current picture of the same view as a current view.~~

~~3~~2. The image processing device according to claim ~~2~~1, wherein

the predictive vector generating unit sets the co-located block to be available when a property of a vector of the current block is identical to a property of a vector of the co-located block.

~~43~~43. The image processing device according to claim ~~32~~32, wherein

the property of the vector is a type of a vector, and

the predictive vector generating unit sets the co-located block to be available when the property of the vector of the current block is a parallax vector and the property of the vector of the co-located block is a parallax vector.

~~54~~54. The image processing device according to claim ~~32~~32, wherein

the predictive motion vector generating unit determines the property of the vector of the current block and the property of the vector of the co-located block using POC (Picture Order Count) that indicates an output order of pictures.

~~65~~65. The image processing device according to claim ~~54~~54, wherein

the predictive motion vector generating unit determines the property of the vector of the current block and the property of the vector of the co-located block using the POC of the current picture, the POC of a current reference picture referred from the current picture, the POC of the co-located picture, and the POC of a co-located reference picture referred from the co-located picture.

~~7~~6. The image processing device according to claim ~~6~~5, wherein

the predictive motion vector generating unit determines that the property of the vector of the current block and the property of the vector of the co-located block are parallax vectors when the POC of the current picture is identical to the POC of the current reference picture referred from the current picture and the POC of the co-located picture is identical to the POC of the co-located reference picture referred from the co-located picture.

~~8. The image processing device according to claim 2, wherein~~

~~the predictive vector generating unit sets the co-located block to be not available when the property of the vector of the current block is different from the property of the vector of the co-located block.~~

~~9~~7. ~~The image processing device according to claim 8~~An image processing device comprising:

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,

wherein the predictive vector generating unit

generates a predictive vector of the current parallax vector using a parallax vector of a co-located block included in a co-located picture of a time different from a current picture of the same view as a current view; and

wherein the predictive vector generating unit sets the co-located block to be not available when a property of the vector of the current block is different from a property of the vector of the co-located block,

wherein the property of the vector is a type of a reference picture, and

the predictive vector generating unit sets the co-located block to be not available when the type of the reference picture of the current block is different from the type of the reference picture of the co-located block.

~~108~~8. The image processing device according to claim ~~81~~1, wherein

the property of the vector is a type of a reference picture, and

the predictive vector generating unit skips a process of searching a reference index when the type of the reference picture of the current block is a long reference type and the type of the reference picture of the co-located block is a long reference type.

~~119~~9. The image processing device according to claim 1, wherein

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

~~12~~10. The image processing device according to claim 1, wherein

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

~~13~~11. The image processing device according to claim 1, wherein

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

the difference vector generating unit generates a difference vector between the current motion vector and the predictive vector generated by the predictive vector generating unit.

~~14~~12. The image processing device according to claim ~~13~~11, wherein

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

~~15~~13. The image processing device according to claim ~~13~~11, wherein

the predictive vector generating unit generates a predictive 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.

~~16~~14. The image processing device according to claim ~~15~~13, wherein

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

~~17~~15. The image processing device according to claim 1, wherein

the predictive vector generating unit generates the predictive vector using a vector of a block located at the same position as the current block in a state where a position of a pixel of a picture of the same time as the current picture of a view different from the current view is shifted.

~~18~~16. The image processing device according to claim ~~17~~15, wherein

the predictive vector generating unit sets a shift amount of the image according to a parallax vector of a neighboring region of the current block.

~~19~~17. The image processing device according to claim ~~18~~16, wherein

the predictive vector generating unit uses a parallax

vector in an X-direction, of the neighboring block in which the value of a parallax vector in a Y-direction is not zero as the shift amount.

~~20~~18. The image processing device according to claim ~~18~~16, wherein

the predictive vector generating unit uses a value calculated from parallax vectors in an X-direction, of a plurality of the neighboring blocks in which the value of a parallax vector in a Y-direction is not zero as the shift amount.

~~21~~19. The image processing device according to claim ~~20~~18, wherein

the predictive vector generating unit uses an average value or a median value of the parallax vectors in the X-direction, of the plurality of the neighboring blocks in which the value of the parallax vector in the Y-direction is not zero as the shift amount of the image.

~~22~~20. The image processing device according to claim ~~17~~15, wherein

the predictive vector generating unit sets the shift amount of the image according to a global parallax vector.

~~23~~21. An image processing method of an image processing device, for allowing the image processing device to execute the steps of:

generating 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

generating a difference vector between the current parallax vector and the generated predictive vector,

wherein the step of generating the predictive vector generates a predictive vector of the current parallax vector using a parallax vector of a co-located block included in a co-located picture of a time different from a current picture of the same view as a current view; and

wherein the step of generating the predictive vector sets the co-located block to be not available when a property of the vector of the current block is different from a property of the vector of the co-located block.

~~24. An image processing device comprising:~~

~~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 decoding the current parallax vector; and~~

~~an arithmetic unit that performs an operation of adding the predictive vector generated by the predictive vector generating unit to a difference vector between the current parallax vector and the predictive vector to reconstruct the current parallax vector.~~

~~25. An image processing method of an image processing device, for allowing the image processing device to execute:~~

~~generating 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 decoding the current parallax vector; and~~

~~performing an operation of adding the generated predictive vector to a difference vector between the current parallax vector and the predictive vector to reconstruct the current parallax vector.~~

~~26. An image processing device comprising:~~

~~a predictive 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 of a different time from a current picture when encoding a current motion vector of the current block used in prediction using correlation in a temporal direction and generates a predictive vector of the current motion vector using a reference motion vector referred when generating a predictive motion vector; and~~

~~a difference vector generating unit that generates a difference vector between the current motion vector and the predictive vector generated by the predictive vector generating unit.~~

~~27. An image processing method of an image processing device, for allowing the image processing device to execute:~~

~~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 of a different time from a~~

~~current picture when encoding a current motion vector of the current block used in prediction using correlation in a temporal direction, and generating a predictive vector of the current motion vector using a reference motion vector referred when generating a predictive motion vector; and~~

~~generating a difference vector between the current motion vector and the generated predictive vector.~~

22. The image processing method according to claim 21, wherein

the step of generating the predictive vector sets the co-located block to be available when a property of a vector of the current block is identical to a property of a vector of the co-located block.

23. The image processing method according to claim 22,

wherein the property of the vector is a type of a vector, and

the step of generating the predictive vector sets the co-located block to be available when the property of the vector of the current block is a parallax vector and the property of the vector of the co-located block is a parallax vector.

24. The image processing method according to claim 22,

wherein the step of generating the predictive motion vector determines the property of the vector of the current block and the property of the vector of the co-located block using POC (Picture Order Count) that indicates an output order of pictures.

25. The image processing method according to claim 24,

wherein the step of generating the predictive motion vector determines the property of the vector of the current block and the property of the vector of the co-located block using the POC of the current picture, the POC of a current reference picture referred from the current picture, the POC of the co-located picture, and the POC of a co-located reference picture referred from the co-located picture.

26. The image processing method according to claim 25,

wherein the step of generating the predictive motion vector determines that the property of the vector of the current block and the property of the vector of the co-located block are parallax vectors when the POC of the current picture is identical to the POC of the current reference picture referred from the current picture and the POC of the co-located picture is identical to the POC of the co-located reference picture referred from the co-located picture.

27. An image processing method comprising the steps of:

generating 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

generating a difference vector between the current parallax vector and the predictive vector generated by the predictive vector generating step,

wherein the step of generating the predictive vector generates a predictive vector of the current parallax

vector using a parallax vector of a co-located block included in a co-located picture of a time different from a current picture of the same view as a current view; and

wherein the step of generating the predictive vector sets the co-located block to be not available when a property of the vector of the current block is different from a property of the vector of the co-located block,

wherein the property of the vector is a type of a reference picture, and

the step of generating the predictive vector sets the co-located block to be not available when the type of the reference picture of the current block is different from the type of the reference picture of the co-located block.

28. The image processing method according to claim 21, wherein

the property of the vector is a type of a reference picture, and

the step of generating the predictive vector skips a process of searching a reference index when the type of the reference picture of the current block is a long reference type and the type of the reference picture of the co-located block is a long reference type.

29. The image processing method according to claim 21, wherein

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

30. The image processing method according to claim 21, wherein

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

31. The image processing method according to claim 21, wherein

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

the step of generating the difference vector generates a difference vector between the current motion vector and the predictive vector generated by the predictive vector generating unit.

32. The image processing method according to claim 31, wherein

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

33. The image processing method according to claim 31, wherein

the step of generating the predictive vector generates a predictive 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.

34. The image processing method according to claim 33, wherein

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

35. The image processing method according to claim 31, wherein

the step of generating the predictive vector generates the predictive vector using a vector of a block located at the same position as the current block in a state where a position of a pixel of a picture of the same time as the current picture of a view different from the current view is shifted.

36. The image processing method according to claim 35, wherein

the step of generating the predictive vector sets a shift amount of the image according to a parallax vector of a neighboring region of the current block.

37. The image processing method according to claim 36, wherein

the step of generating the predictive vector uses a parallax vector in an X-direction, of the neighboring block in which the value of a parallax vector in a Y-direction is not zero as the shift amount.

38. The image processing method according to claim 36, wherein

the step of generating the predictive vector uses a value calculated from parallax vectors in an X-direction, of a plurality of the neighboring blocks in which the value of a parallax vector in a Y-direction is not zero as the shift amount.

39. The image processing method according to claim 38, wherein

the step of generating the predictive vector uses an average value or a median value of the parallax vectors in the X-direction, of the plurality of the neighboring blocks in which the value of the parallax vector in the Y-direction is not zero as the shift amount of the image.

40. The image processing method according to claim 35, wherein

the predictive vector generating unit sets the shift amount of the image according to a global parallax vector.