makes it impossible to perform correct decoding of the picture B2, which may result in stoppage of the decoding process.

[0010]

In view of this, embodiments of the present invention arewas made with an aim to provide a moving picture coding method and a moving picture decoding method which make it possible to effectively prevent error propagation in decoding.

[Solution to Problem]

[0011]

~~The moving picture coding method according to an aspect of the present invention is a method for performing inter prediction coding on a coding target block included in a coding target picture. More specifically, the moving picture coding method including: coding the coding target block using a motion vector; generating a plurality of motion vector predictors; and coding the motion vector using one of the plurality of motion vector predictors generated in the generating, wherein, in the generating, a replacement vector which replaces a temporal motion vector predictor is included in the plurality of motion vector predictors when it is impossible to obtain the temporal motion vector predictor from a block which is included in a coded picture different from the coding target picture and corresponds to the coding target block.~~In a first aspect, there is provided a moving picture coding method for performing inter prediction coding on a coding target block included in a coding target picture, the moving picture coding method comprising: coding the coding target block using a motion vector; generating a plurality of motion vector predictors; and coding the motion vector using one of the plurality of motion vector predictors generated in the generating, wherein, in the generating, a replacement vector which replaces a temporal motion vector predictor is included in the plurality of motion vector predictors when it is impossible to obtain the temporal motion vector predictor from a block which is included in a coded picture different from the coding target picture and corresponds to the coding target block.

[0012]

With this structure, it is possible to prevent decoding error propagation while suppressing decrease in coding efficiency by selectively including a temporal motion vector predictor or a replacement vector in motion vector predictor candidates.

[0013]

In addition, in the generating, a motion vector having a motion quantity of 0 may be included, as the replacement vector, in the plurality of motion vector predictors when obtainment of the temporal motion vector predictor from the coded picture is prohibited.

[0014]

including the coding target picture.

[0018]

In addition, the parallax vector may be calculated using a motion vector obtained when inter-view prediction is performed on each of blocks included in the dependent view, using the picture included in the base view and corresponding to the picture in the dependent view. In addition, in the generating, the parallax vector may be included, as the replacement vector, in the plurality of motion vector predictors, the parallax vector being used when coding a picture coded immediately before the coded picture.

[0019]

~~The moving picture decoding method according to an aspect of the present invention is a method for performing inter prediction decoding on a decoding target block in a decoding target picture. More specifically, the moving picture decoding method includes: generating a plurality of motion vectors; decoding the motion vector using one of the plurality of motion vector predictors generated in the generating; and decoding the decoding target block using the motion vector decoded in the decoding. In the generating, a replacement vector which replaces a temporal motion vector predictor is included in the plurality of motion vector predictors when it is impossible to obtain the temporal motion vector predictor from a block which is included in a decoded picture different from the decoding target picture and corresponds to the decoding target block.~~In a second aspect, there is provided a moving picture decoding method for performing inter prediction decoding on a decoding target block included in a decoding target picture, the moving picture decoding method comprising: decoding the decoding target block using a motion vector; generating a plurality of motion vector predictors; and decoding the motion vector using one of the plurality of motion vector predictors generated in the generating, wherein, in the generating, a replacement vector which replaces a temporal motion vector predictor is included in the plurality of motion vector predictors when it is impossible to obtain the temporal motion vector predictor from a block which is included in a decoded picture different from the decoding target picture and corresponds to the decoding target block.

[0020]

Disclosed herein is a~~A~~ moving picture coding apparatus that~~according to an aspect of the present invention~~ codes a coding target block included in a coding target picture. More specifically, the moving picture coding apparatus includes: an image encoder which encodes the coding target block using a motion vector; a motion vector predictor candidate generating unit configured to generate a plurality of motion vector predictors; and a motion vector encoder which encodes the motion vector using one of the plurality of motion vector predictors generated by the motion vector predictor candidate

generating unit. The motion vector predictor candidate generating unit is configured to add a replacement vector which replaces a temporal motion vector predictor to the plurality of motion vector predictors when it is impossible to obtain the temporal motion vector predictor from a block which is included in a coded picture different from the coding target picture and corresponds to the coding target block.

[0021]

Disclosed herein is a~~A~~ moving picture decoding apparatus that~~according to an aspect of the present invention~~ decodes a decoding target block included in a decoding target picture. More specifically, the moving picture decoding apparatus includes: an image decoder which decodes the decoding target block using a motion vector; a motion vector predictor candidate generating unit configured to generate a plurality of motion vector predictors; and a motion vector decoder which decodes the motion vector using one of the plurality of motion vector predictors generated by the motion vector predictor candidate generating unit. The motion vector predictor candidate generating unit is configured to add a replacement vector which replaces a temporal motion vector predictor to the plurality of motion vector predictors when it is impossible to obtain the temporal motion vector predictor from a block which is included in a decoded picture different from the decoding target picture and corresponds to the decoding target block.

[0022]

~~A moving picture coding and decoding apparatus according to an aspect of the present invention includes: a moving picture coding unit configured to perform inter prediction coding on a coding target block included in a coding target picture; and a moving picture decoding unit configured to perform inter prediction decoding on a decoding target block generated by the moving picture coding unit. The moving picture coding unit includes: an image encoder which encodes the coding target block using a motion vector; a first motion vector predictor candidate generating unit configured to generate a plurality of motion vector predictors; and a motion vector encoder~~

~~which encodes the motion vector using one of the plurality of motion vector predictors generated by the first motion vector predictor candidate generating unit. The first motion vector predictor candidate generating unit is configured to add a replacement vector which replaces a temporal motion vector predictor to the plurality of motion vector predictors when it is impossible to obtain the temporal motion vector predictor from a block which is included in a coded picture different from the coding target picture and corresponds to the coding target block. The moving picture decoding unit includes: an image decoder which decodes the decoding target block using a motion vector; a second motion vector predictor candidate generating unit configured to generate a plurality of motion vector predictors; and a motion vector decoder which decodes the motion vector using one of the plurality of motion vector predictors generated by the second motion vector predictor candidate generating unit. The second motion vector predictor candidate generating unit is configured to add a replacement vector which replaces a temporal motion vector predictor to the plurality of motion vector predictors when it is impossible to obtain the temporal motion vector predictor from a block which is included in a decoded picture different from the decoding target picture and corresponds to the decoding target block.~~In a third aspect, there is provided a moving picture coding and decoding apparatus comprising: a moving picture coding unit configured to perform inter prediction coding on a coding target block included in a coding target picture; and a moving picture decoding unit configured to perform inter prediction decoding on a decoding target block generated by the moving picture coding unit, the moving picture coding unit including: an image encoder which encodes the coding target block using a motion vector; a first motion vector predictor candidate generating unit configured to generate a plurality of motion vector predictors; and a motion vector encoder which encodes the motion vector using one of the plurality of motion vector predictors generated by the first motion vector predictor candidate generating unit, wherein the first motion vector predictor candidate generating unit is configured to include a replacement vector which replaces a temporal motion vector predictor in the plurality of motion vector predictors when it is impossible to obtain the temporal motion

vector predictor from a block which is included in a coded picture different from the coding target picture and corresponds to the coding target block, and the moving picture decoding unit including: an image decoder which decodes the decoding target block using a motion vector; a second motion vector predictor candidate generating unit configured to generate a plurality of motion vector predictors; and a motion vector decoder which decodes the motion vector using one of the plurality of motion vector predictors generated by the second motion vector predictor candidate generating unit, wherein the second motion vector predictor candidate generating unit is configured to include a replacement vector which replaces a temporal motion vector predictor in the plurality of motion vector predictors when it is impossible to obtain the temporal motion vector predictor from a block which is included in a decoded picture different from the decoding target picture and corresponds to the decoding target block.

[0023]

Disclosed herein is a~~The~~ moving picture coding method ~~according to another aspect of the present invention is a method~~ of coding the coding target block using a reference motion vector of a reference block included in a reference picture different from a coding target picture including the coding target block. The reference block in the reference picture is co-located with the coding target block in the coding target picture. The image coding method includes: determining a value of a predetermined flag indicating whether to use a first reference motion vector of the reference block or a second reference motion vector of the reference block at the time of motion vector coding on the coding target block; assigning a bitstream a third reference motion vector calculated from the second reference

reference motion vector among the forward and backward reference motion vectors may be selected when the coding target block is located forward of the reference block; and the backward reference motion vector among the forward and backward reference motion vectors may be selected when the coding target block is located backward of the reference block.

[0029]

In addition, when the reference block includes one of the forward and backward reference motion vectors, in the selecting, one of the forward and backward reference motion vectors which is included in the reference block may be selected irrespective of a positional relationship between the reference block and the coding target block.

[0030]

Disclosed herein is a~~The~~ moving picture decoding method ~~according to another aspect of the present invention is a method~~ for decoding the decoding target block using a reference motion vector of a reference block included in a reference picture different from a decoding target picture including the decoding target block. The reference block in the reference picture is co-located with the decoding target block in the decoding target picture. The image decoding method includes: decoding a value of a predetermined flag indicating whether to use a first reference motion vector of the reference block or to use a second reference motion vector of the reference picture at the time of motion vector decoding for the decoding target block; decoding, from a bitstream, a third reference motion vector calculated from the second reference motion vector when the predetermined flag indicates use of the second reference motion vector of the reference picture; and decoding a motion vector of the decoding target block according to the value of the predetermined flag.

[0031]

In addition, the decoding may include, when the reference block includes two or more reference motion vectors: selecting one of the reference motion vectors, based on whether the reference picture is located forward or backward of the decoding target picture;

and decoding the motion vector for the decoding target block using the determined reference motion vector.

[0032]

In addition, when the reference block includes forward and backward reference motion vectors, in the selecting, the forward reference motion vector among the forward and backward reference motion vectors may be selected when the decoding target block is located forward of the reference block; and the backward reference motion vector among the forward and backward reference motion vectors may be selected when the decoding target block is located backward of the reference block.

[0033]

In addition, when the reference block includes one of the forward and backward reference motion vectors, in the selecting, one of the forward and backward reference motion vectors which is included in the reference block may be selected irrespective of a positional relationship between the reference block and the decoding target block.

[0034]

In addition, the second reference motion vector of the reference picture may be calculated from an average value of motion vectors of decoded blocks in the reference picture.

[0035]

In addition, the second reference motion vector of the reference picture may be calculated from a motion vector which appears most frequently from among motion vectors of decoded blocks in the reference picture.

Advantageous Effects

[0036]

According to embodiments of the present invention, it is possible to prevent decoding error propagation while suppressing decrease in coding efficiency by selectively including a temporal motion vector predictor or a replacement vector in motion vector predictor candidates.