

SUMMARY OF THE INVENTION

PROBLEMS TO BE SOLVED BY THE INVENTION

[0017]

As described above, according to HEVC standards, no restriction is set to motion vectors in inter prediction. In this case, a decoded image of a different tile at a different time can be used as a reference image. Accordingly, independent encoding and decoding in the time direction for each tile is not allowed.

[0018]

~~The present technique has been developed in consideration of these situations, and is provided as~~Embodiments of the present invention provide a technique capable of performing encoding and decoding in the time direction independently for each tile.

SOLUTIONS TO PROBLEMS

[0019]

According to a first aspect of the present ~~technique~~invention, there is provided a decoding device, ~~including~~comprising: a motion compensation unit generating a prediction image by performing, for each of tiles, motion compensation of a reference image within a co-located tile based on tile splittable information indicating that decoding is allowed for each of the tiles and motion vector information representing a motion vector used for generating encoded data of a decoding target current image when a picture of the current image is split into the tiles and decoded; and a decoding unit decoding the encoded data using the prediction image generated by the motion compensation unit.

[0020]

~~The decoding method according to the first aspect of the present technique corresponds to the decoding device according to the first aspect of the present technique.~~

[0021]

According to a second aspect of the present invention, there is provided a decoding method, comprising: a motion compensation step performed by a decoding device which generates a prediction image by performing, for each of tiles, motion compensation of a reference image within a co-located tile based on tile splittable information indicating that decoding is allowed for each of the tiles and motion vector information representing a motion vector used for generating encoded data of a decoding target current image when a picture of the current image is split into the tiles and decoded; and a decoding step performed by the decoding device which decodes the encoded data using the prediction image generated by the processing of the motion compensation step.

According to the first aspect~~above aspects~~ of the present ~~technique~~invention, a prediction image is generated by performing, for each of tiles, motion compensation of a reference image within a co-located tile based on tile splittable information indicating that decoding is allowed for each of the tiles and motion vector information representing a motion vector used for generating encoded data of a decoding target current image when a picture of the current image is split into the tiles and decoded. The encoded data is decoded using the prediction image.

[0022]

According to a ~~second~~third aspect of the present technique~~invention~~, there is provided an encoding device, ~~including~~comprising: a motion compensation unit generating a prediction image by performing motion compensation of a reference image at a time different from the time of an encoding target current image based on a motion vector detected within a tile when a picture of the current image is split into the tiles and encoded; an encoding unit encoding the current image and

generating encoded data using the prediction image generated by the motion compensation unit; a setting unit setting tile splittable information indicating that decoding is allowed for each unit of the tiles; and a transmission unit transmitting the encoded data generated by the encoding unit, and the tile splittable information set by the setting unit.

[0023]

~~The encoding method according to the second aspect of the present technique corresponds to the encoding device according to the second aspect of the present technique.~~

[0024]

According to a fourth aspect of the present invention, there is provided an encoding method, comprising: a motion compensation step performed by an encoding device which generates a prediction image by performing motion compensation of a reference image at a time different from the time of an encoding target current image based on a motion vector detected within a tile when a picture of the current image is split into the tiles and encoded; an encoding step performed by the encoding device which encodes the current image and generating encoded data using the prediction image generated by the processing of the motion compensation step; a setting step performed by the encoding device which sets tile splittable information indicating that decoding is allowed for each unit of the tiles; and a transmission step performed by the encoding device which transmits the encoded data generated by the processing of the encoding step, and the tile splittable information set by the processing of the setting step.

~~According to the second aspect~~above aspects of the present ~~technique~~invention, a prediction image is generated by performing motion compensation of a reference image at a time different from the time of an encoding target current image based on a motion vector detected within a tile when a picture of the current image is split into the tiles and encoded. Encoded data is generated by encoding the current image using the prediction image. Tile splittable information indicating that decoding is allowed for each unit of the tiles is set. The encoded data and the tile splittable information are transmitted.

[0025]

Further, the above ~~decoding device of the first aspect and the encoding device of the second aspect~~ can be realized by

making a computer execute a program.

[0026]

Moreover, the program executed by the computer for realizing the above decoding device ~~of the first aspect~~ and the encoding device ~~of the second aspect~~ can be provided by transmitting the program via a transmission medium, or by recording the program on a recording medium.

[0027]

In addition, the above decoding device ~~of the first aspect~~ and the encoding device ~~of the second aspect~~ may be separate devices, or may be inside blocks constituting

one device.

EFFECTS OF THE INVENTION

[0028]

According to the ~~first aspect~~above aspects of the present ~~technique~~invention, independent decoding in the time direction for each tile is allowed.

[0029]

Moreover, according to the ~~second aspect~~above aspects of the present ~~technique~~invention, independent encoding in the time direction for each tile is allowed.

BRIEF DESCRIPTION OF DRAWINGS

[0030]

Fig. 1 is a diagram describing a reference image for conventional inter prediction.

Fig. 2 is a block diagram showing a constitution example of a conventional decoding device.

Fig. 3 is a block diagram showing a constitution example of an encoding device to which the present technique is applied according to a first embodiment.

Fig. 4 is a block diagram showing a constitution example of an encoding unit in Fig. 3.

Fig. 5 is a diagram describing tiles.

Fig. 6 is a diagram describing a restriction set when a motion vector is detected.

Fig. 7 is a diagram describing a reference image for inter prediction.

Fig. 8 is a diagram showing an example of syntax of SPS.

Fig. 9 is a diagram showing an example of syntax of