

[DESCRIPTION]

[Title of Invention]

IMAGE CODING METHOD, IMAGE DECODING METHOD, IMAGE CODING APPARATUS, IMAGE DECODING APPARATUS, AND IMAGE CODING AND DECODING APPARATUS

[Technical Field]

[0001]

The present invention relates to image coding methods for coding images using motion vectors.

[Background Art]

[0002]

Examples of techniques regarding an image coding method for coding images using motion vectors include techniques described in Non Patent Literatures (NPLs) 1 and 2.

[Citation List]

[Non Patent Literature]

[0003]

[NPL 1] ITU-T Recommendation H.264 "Advanced video coding for generic audiovisual services", March, 2010

[NPL 2] JCT-VC "WD3: Working Draft 3 of High-Efficiency Video Coding", JCTVC-E603, March 2011

[Summary of Invention]

[Technical Problem]

[0004]

Inefficient coding of an image causes delay in processing and also affects decoding of the image.

[0005]

~~Embodiments~~In view of this, an object of the present invention is to provide an image coding method for efficiently coding information constituting an image.

[Solution to Problem]

[0006]

~~In order to achieve the above object, an image coding method according to an aspect of the present invention is an image coding method for coding an image using a motion vector, the method~~

~~including coding a motion vector difference indicating a difference between the motion vector and a predicted motion vector which is a predicted value of the motion vector, wherein the coding includes: coding a first portion that is a part of a first component which is one of a horizontal component and a vertical component of the motion vector difference; coding a second portion that is a part of a second component which is different from the first component and is the other one of the horizontal component and the vertical component; coding a third portion that is a part of the first component and is different from the first portion; coding a fourth portion that is a part of the second component and is different from the second portion; and generating a code string which includes the first portion, the second portion, the third portion, and the fourth portion in an order of the first portion, the second portion, the third portion, and the fourth portion.~~According to a first aspect, there is provided an image coding method for coding an image using a motion vector, the method comprising coding a motion vector difference indicating a difference between the motion vector and a predicted motion vector which is a predicted value of the motion vector, wherein the coding includes: coding a first portion that is a part of a first component which is one of a horizontal component and a vertical component of the motion vector difference; coding a second portion that is a part of a second component which is different from the first component and is the other one of the horizontal component and the vertical component; coding a third portion that is a part of the first component and is different from the first portion; coding a fourth portion that is a part of the second component and is different from the second portion; and generating a code string which includes the first portion, the second portion, the third portion, and the fourth portion in an order of the first portion, the second portion, the third portion, and the fourth portion.

[0006a]

According to a second aspect, there is provided an image decoding method for decoding an image using a motion vector, the method comprising decoding a motion vector difference indicating a difference between the motion vector and a predicted motion vector which is a predicted value of the motion vector, wherein the decoding includes: obtaining a code string which includes (i) a first portion that is a part of a first component which is one of a horizontal

component and a vertical component of the motion vector difference, (ii) a second portion that is a part of a second component which is different from the first component and is the other one of the horizontal component and the vertical component, (iii) a third portion that is a part of the first component and is different from the first portion, and (iv) a fourth portion which is a part of the second component and is different from the second portion, in an order of the first portion, the second portion, the third portion, and the fourth portion; and decoding the first portion included in the code string, decoding the second portion included in the code string, decoding the third portion included in the code string, and decoding the fourth portion included in the code string.

[0006b]

According to a third aspect, there is provided an image coding apparatus which codes an image using a motion vector, the apparatus comprising a coding unit configured to code a motion vector difference indicating a difference between the motion vector and a predicted motion vector which is a predicted value of the motion vector, wherein the coding unit is configured to: code a first portion that is a part of a first component which is one of a horizontal component and a vertical component of the motion vector difference; code a second portion that is a part of a second component which is different from the first component and is the other one of the horizontal component and the vertical component; code a third portion that is a part of the first component and is different from the first portion; code a fourth portion that is a part of the second component and is different from the second portion; and generate a code string which includes the first portion, the second portion, the third portion, and the fourth portion in an order of the first portion, the second portion, the third portion, and the fourth portion.

[0006c]

According to a fourth aspect, there is provided an image decoding apparatus which decodes an image using a motion vector, the apparatus comprising a decoding unit configured to decode a motion vector difference indicating a difference between the motion vector and a predicted motion vector which is a predicted value of the motion vector, wherein the decoding unit is configured to: obtain a code string which includes (i) a first portion that is a part

of a first component which is one of a horizontal component and a vertical component of the motion vector difference, (ii) a second portion that is a part of a second component which is different from the first component and is the other one of the horizontal component and the vertical component, (iii) a third portion that is a part of the first component and is different from the first portion, and (iv) a fourth portion which is a part of the second component and is different from the second portion, in an order of the first portion, the second portion, the third portion, and the fourth portion; and decode the first portion included in the code string, decode the second portion included in the code string, decode the third portion included in the code string, and decode the fourth portion included in the code string.

[0006d]

According to a fifth aspect, there is provided an image coding and decoding apparatus comprising the above image coding apparatus and the above image decoding apparatus.

[0007]

These general and specific aspects may be implemented using an apparatus, a system, an integrated circuit, a computer program, or a non-transitory computer-readable recording medium such as a CD-ROM, or any combination of apparatuses, systems, integrated circuits, computer programs, or recording media.

[Advantageous Effects of Invention]

[0008]

Information constituting an image is efficiently coded according to embodiments of the present invention.

[Brief Description of Drawings]

[0009]

[FIG. 1] FIG. 1 is a block diagram showing an example of a configuration of a conventional motion vector difference decoding method.

[FIG. 2] FIG. 2 is a flowchart showing a flow of operation of the conventional motion vector difference decoding method.

[FIG. 3] FIG. 3 is a flowchart showing context adaptive binary arithmetic decoding processing of the conventional arithmetic decoding method.