

SAO process, and the offset value is added to the bitstream.

[Citation List]

[Non Patent Literature]

[0004]

- 5 [NPL 1] Joint Collaborative Team on Video Coding (JCT-VC) of
ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG11, 9th Meeting:
Geneva, CH, 27 April – 7 May 2012, JCTVC-I0602_CDTexts_r2.doc,
BoG report on integrated text of SAO adoptions on top of
JCTVC-I0030,
10 [http://phenix.it-sudparis.eu/jct/doc_end_user/documents/9_Genev
a/wg11/JCTVC-I0602-v3.zip](http://phenix.it-sudparis.eu/jct/doc_end_user/documents/9_Geneva/wg11/JCTVC-I0602-v3.zip)

[Summary of Invention]

[Technical Problem]

[0005]

- 15 In the conventional technique, accelerated processing is
desired in coding and decoding an image.

[0006]

- Here, embodiments of the present invention provide an image
coding method and an image decoding method in which the
20 processing can be accelerated.

[Solution to Problem]

[0007]

- According to a first aspect of the present invention, there is
25 provided an image coding method for coding an input image, the
method comprising: converting, into a bin string, a sample adaptive
offset value used in a sample adaptive offset process to be added to
a pixel value of a reconstructed image corresponding to the input

image; and performing, using a processor, bypass arithmetic coding on the bin string using a fixed probability.

[0007a]

5 According to a second aspect of the present invention, there is provided an image coding apparatus that codes an input image, the apparatus comprising a control circuit and storage electrically connected to the control circuit, wherein the control circuit executes: converting, into a bin string, a sample adaptive offset value used in a sample adaptive offset process to be added to a pixel value of a
10 reconstructed image corresponding to the input image; and performing bypass arithmetic coding on the bin string using a fixed probability.

[0007b]According to a third aspect of the present invention, there is provided an image coding and decoding apparatus,
15 comprising: the above image coding apparatus; and an image decoding apparatus that decodes a coded image, the image decoding apparatus comprising a control circuit and storage electrically connected to the control circuit, wherein the control circuit executes: performing bypass arithmetic decoding on a bin string using a fixed
20 probability; converting the decoded bin string into a sample adaptive offset value; and, adding, in a sample adaptive offset process, the sample adaptive offset value to a pixel value of a reconstructed image corresponding to the coded image.

[0008]

25 Disclosed herein is an image decoding method for decoding a coded image, and includes: performing bypass arithmetic decoding on a bin string using a fixed probability, the bin

string being coded and indicating an offset value used in an offset process to be applied to a pixel value of a reconstructed image corresponding to the coded image; and converting, into the offset value, the bin string on which the bypass arithmetic decoding is performed.

[0009]

These general or specific aspects of the present invention may be implemented by a system, an apparatus, an integrated circuit, a computer program, a computer-readable recording medium, such as a CD-ROM, or an arbitrary combination of the system, the apparatus, the integrated circuit, the computer program, and the recording medium.

[Advantageous Effects of Invention]

[0010]

With the image coding method, the image coding apparatus, the image decoding method, the image decoding apparatus, and the image coding and decoding apparatus according to embodiments of the present invention, the processing can be accelerated.

[Brief Description of Drawings]

[0011]

[FIG. 1] FIG. 1 is a block diagram illustrating an example configuration of an image coding apparatus according to Embodiment 1.

[FIG. 2] FIG. 2 is a block diagram illustrating an example configuration of an SAO parameter coding unit.

[FIG. 3] FIG. 3 is a block diagram illustrating an example configuration of an sao_offset coding unit.

[FIG. 4] FIG. 4 is a flowchart indicating example processes of the image coding apparatus according to Embodiment 1.

[FIG. 5] FIG. 5 is a flowchart indicating example processes of the SAO parameter coding unit according to Embodiment 1.

[FIG. 6A] FIG. 6A is a flowchart indicating example processes of the sao_offset coding unit according to Embodiment 1.

[FIG. 6B] FIG. 6B is a flowchart indicating example processes of the