[Summary of Invention]

[Technical Problem]

[0004]

For such image coding method and image decoding method, it has been demanded to reduce a processing amount while suppressing deterioration of coding efficiency.

[0005]

Embodiments of t~~T~~he present invention provide~~s~~ an image coding method and an image decoding method each capable of reducing a processing amount while suppressing deterioration of coding efficiency.

[Solution to Problem]

[0006]

According to a first aspect, there is provided an image decoding method, comprising: performing arithmetic decoding on a first flag indicating whether or not an SAO parameter for a target block to be decoded is identical to an SAO parameter for a left neighboring block immediately left of the target block, the SAO parameter for the target block indicating details of Sample Adaptive Offset (SAO) processing; performing arithmetic decoding on the SAO parameter for the target block, when the first flag indicates that the SAO parameter for the target block is different from the SAO parameter for the left neighboring block; and performing, according to the first flag, SAO processing on a luminance signal, a chrominance Cb signal, and a chrominance Cr signal which are included in the target block, by using one of: the SAO parameter for the target block which has been applied with the arithmetic decoding; and the SAO parameter for the left neighboring block, wherein, in the performing of the arithmetic decoding on the first flag, a single first context is used to perform the arithmetic decoding on the first flag for the luminance signal, the chrominance Cb signal, and the chrominance Cr signal, the single first context is used in common for decoding a plurality of the first flag in a same picture.

According to a second aspect, there is provided an image decoding apparatus, comprising: control circuitry; and storage accessible from the control circuitry, wherein the control circuitry executes: performing arithmetic decoding on a first flag indicating whether or not an SAO parameter for a target block to be decoded is identical to an SAO parameter for a left neighboring block immediately left of the target block, the SAO parameter for the target block indicating details of Sample Adaptive Offset (SAO) processing; performing arithmetic decoding on the SAO parameter for the target block, when the first flag indicates that the SAO parameter for the target block is different from the SAO parameter for the left neighboring block; and performing, according to the first flag, SAO processing on a luminance signal, a chrominance Cb signal, and a chrominance Cr signal which are included in the target block, by using one of: the SAO parameter for the target block which has been applied with the arithmetic decoding; and the SAO parameter for the left neighboring block, wherein, in the performing of the arithmetic decoding on the first flag, a single first context is used to perform the arithmetic decoding on the first flag for the luminance signal, the chrominance Cb signal, and the chrominance Cr signal, the single first context is used in common for decoding a plurality of the first flag in a same picture.

~~In one general aspect, the techniques disclosed here feature an image coding method, including: performing Sample Adaptive Offset (SAO) processing on a luminance signal, a chrominance Cb signal, and a chrominance Cr signal which are included in a target block to be coded; performing arithmetic coding on a first flag indicating whether or not an SAO parameter for the target block is identical to an SAO parameter for a left neighboring block immediately left of the target block, the SAO parameter for the target block indicating details of the SAO processing; and performing arithmetic coding on the SAO parameter for the target block, when the SAO parameter for the target block is different from the SAO parameter for the left neighboring block, wherein, in the performing of the arithmetic coding on the first flag, the arithmetic coding is performed on the first flag for the~~

~~luminance signal, the chrominance Cb signal, and the chrominance Cr signal by using a single context.~~

[0007]

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

[Advantageous Effects of Invention]

[0008]

Embodiments of tThe present invention provides an image coding method and an image decoding method each capable of reducing a processing amount while suppressing deterioration of coding efficiency.

[Brief Description of Drawings]

[0009]

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

[FIG. 2] FIG. 2 is a flowchart of image coding according to Embodiment 1.

[FIG. 3] FIG. 3 is a block diagram of an SAO parameter variable length coding unit according to Embodiment 1.

[FIG. 4] FIG. 4 is a flowchart of SAO parameter variable length coding according to Embodiment 1.

[FIG. 5] FIG. 5 is a block diagram of an sao_merge_left_flag coding unit according to Embodiment 1.

[FIG. 6] FIG. 6 is a flowchart of sao_merge_left_flag coding according to Embodiment 1.

[FIG. 7] FIG. 7 is a flowchart of an image coding method according to Embodiment 1.

[FIG. 8] FIG. 8 is a table showing evaluation results of the image coding method according to Embodiment 1.

[FIG. 9] FIG. 9 is a block diagram of an image decoding apparatus according to Embodiment 2.

[FIG. 10] FIG. 10 is a flowchart of image decoding according to Embodiment 2.

[FIG. 11] FIG. 11 is a block diagram of an SAO parameter variable length decoding unit according to Embodiment 2.

[FIG. 12] FIG. 12 is a flowchart of SAO parameter variable length decoding according to Embodiment 2.

[FIG. 13] FIG. 13 is a block diagram of an sao_merge_left_flag decoding unit according to Embodiment 2.