CLAIMS

1. An apparatus for video decoding, the apparatus comprising:

a processor which is configured for determining whether an offset parameter of a current block is determined according to an offset parameter of a left block, and compensating for samples of the current block by using offset values,

wherein:

in response to determining that the offset parameter of the current block is determined according to the offset parameter of the left block, the processor is configured for determining the offset parameter of the current block using the offset parameter of the left block,

the processor is further configured for obtaining, from the bitstream, upper offset merging information indicating whether the offset parameter of the current block is determined according to an offset parameter of an upper block in response to determining that left offset merging information indicates that the offset parameter of the current block is not determined according to the offset parameter of the left block,

in response to determining that the upper offset merging information indicates that the offset parameter of the current block is determined according to the offset parameter of the upper block, the processor is configured for determining an offset parameter of the current block using the offset parameter of the upper block,

the processor is further configured for obtaining, from the bitstream, offset type information of a luma component of the current block and offset type information of a chroma component of the current block in response to determining that the upper offset merging information indicates that the offset parameter of the current block is not determined according to the offset parameter of the upper block,

when the offset type information of the luma component of the current block indicates an edge offset type, the processor is configured for obtaining, from the bitstream, absolute values of luma offset values and a luma edge class indicating a direction of a luma edge of the current block and compensating for luma samples of the current block by using the absolute values of the luma offset values and the luma edge class;

when the offset type information of the chroma component of the current block indicates the edge offset type, the processor is configured for obtaining, from the bitstream, absolute values of chroma offset values and a chroma edge class indicating a direction of a chroma edge of the current block and compensating for chroma samples of the current block by using the absolute values of the chroma offset values and the chroma edge class;

when the offset type information of the luma component of the current block indicates a band offset type, the processor is configured for obtaining, from the bitstream, the absolute values of the luma offset values and signs of the luma offset values and compensating for the luma samples of the current block by using the absolute values of the luma offset values and the signs of the luma offset values; and

when the offset type information of the chroma component of the current block indicates the band offset type, the processor is configured for obtaining, from the bitstream, the absolute values of the chroma offset values and signs of the chroma offset values, and compensating for the chroma samples of the current block by using the absolute values of the chroma offset values and the signs of the chroma offset values.

2. A video encoding method comprising:

generating left offset merge information indicating whether an offset parameter of a current block to be derived from an offset parameter of an left block;

in response to determining that the offset parameter of the current block is not determined according to the offset parameter of the left block, generating upper offset merge information indicating whether an offset parameter of a current block to be derived from an offset parameter of an upper block; and

in response to determining that the offset parameter of the current block is not determined according to the offset parameter of the upper block, generating offset type information of a luma component of the current block and offset type information of a chroma component of the current block,

wherein the generating offset type information of a luma component of the current block and offset type information of a chroma component of the current block comprises:

when the offset type information of the luma component of the current block indicates an edge offset type, generating luma offset values and a luma edge class indicating a direction of a luma edge of the current block;

when the offset type information of the chroma component of the current block indicates the edge offset type, generating chroma offset values and a chroma edge class indicating a direction of a chroma edge of the current block;

when the offset type information of the luma component of the current block indicates a band offset type, generating the luma offset values; and

when the offset type information of the chroma component of the current block indicates the band offset type, generating the chroma offset values.

3. An apparatus for video encoding, the apparatus comprising:

a processor which is configured for generating left offset merge information indicating whether an offset parameter of a current block to be derived from an offset parameter of an left block,

wherein:

in response to determining that the offset parameter of the current block is not determined according to the offset parameter of the left block, the processor is configured for generating upper offset merge information indicating whether an offset parameter of a current block to be derived from an offset parameter of an upper block; and

in response to determining that the offset parameter of the current block is not determined according to the offset parameter of the upper block, the processor is configured for generating offset type information of a luma component of the current block and offset type information of a chroma component of the current block,

when the offset type information of the luma component of the current block indicates an edge offset type, the processor is configured for generating luma offset values and a luma edge class indicating a direction of a luma edge of the current block;

when the offset type information of the chroma component of the current block indicates the edge offset type, the processor is configured for generating chroma offset values and a chroma edge class indicating a direction of a chroma edge of the current block;

when the offset type information of the luma component of the current block indicates a band offset type, the processor is configured for generating the luma offset values; and

when the offset type information of the chroma component of the current block indicates the band offset type, the processor is configured for generating the chroma offset values.

4. A video encoding method comprising:

generating left offset merge information indicating whether an offset parameter of a current block to be derived from an offset parameter of an left block;

in response to determining that the offset parameter of the current block is not determined according to the offset parameter of the left block, generating upper offset merge information indicating whether an offset parameter of a current block to be derived from an offset parameter of an upper block; and

in response to determining that the offset parameter of the current block is not determined according to the offset parameter of the upper block, generating offset type information of a luma component of the current block and offset type information of a chroma component of the current block,

wherein the generating offset type information of a luma component of the current block and offset type information of a chroma component of the current block comprises:

when the offset type information of the luma component of the current block indicates an edge offset type, generating absolute values of luma offset values and a luma edge class indicating a direction of a luma edge of the current block;

when the offset type information of the chroma component of the current block indicates the edge offset type, generating absolute values of chroma offset values and a chroma edge class indicating a direction of a chroma edge of the current block;

when the offset type information of the luma component of the current block indicates a band offset type, generating the absolute values of the luma offset values and signs of the luma offset values indicating whether the luma offset values are positive or negative; and

when the offset type information of the chroma component of the current block indicates the band offset type, generating the absolute values of the chroma offset values and signs of the chroma offset values indicating whether the chroma offset values are positive or negative.

5. An apparatus for video encoding, the apparatus comprising:

a processor which is configured for generating left offset merge information indicating whether an offset parameter of a current block to be derived from an offset parameter of an left block,

wherein:

in response to determining that the offset parameter of the current block is not determined according to the offset parameter of the left block, the processor is configured for generating upper offset merge information indicating whether an offset parameter of a current block to be derived from an offset parameter of an upper block; and

in response to determining that the offset parameter of the current block is not determined according to the offset parameter of the upper block, the processor is configured for generating offset type information of a luma component of the current block and offset type information of a chroma component of the current block,

when the offset type information of the luma component of the current block indicates an edge offset type, the processor is configured for generating absolute values of luma offset values and a luma edge class indicating a direction of a luma edge of the current block;

when the offset type information of the chroma component of the current block indicates the edge offset type, the processor is configured for generating absolute values of chroma offset values and a chroma edge class indicating a direction of a chroma edge of the current block;

when the offset type information of the luma component of the current block indicates a band offset type, the processor is configured for generating the absolute values of the luma offset values and signs of the luma offset values indicating whether the luma offset values are positive or negative; and

when the offset type information of the chroma component of the current block indicates the band offset type, the processor is configured for generating the absolute values of the chroma offset values and signs of the chroma offset values indicating whether the chroma offset values are positive or negative.

6. A video encoding method comprising:

generating left offset merge information indicating whether an offset parameter of a current block to be derived from an offset parameter of an left block;

in response to determining that the offset parameter of the current block is not determined according to the offset parameter of the left block, generating upper offset merge information indicating whether an offset parameter of a current block to be derived from an offset parameter of an upper block; and

in response to determining that the offset parameter of the current block is not determined according to the offset parameter of the upper block, generating offset type information of a luma component of the current block and offset type information of a chroma component of the current block,

wherein the generating offset type information of a luma component of the current block and offset type information of a chroma component of the current block comprises:

when the offset type information of the luma component of the current block indicates an edge offset type, generating luma offset values and a luma edge class indicating a direction of a luma edge of the current block;

when the offset type information of the chroma component of the current block indicates the edge offset type, generating chroma offset values and a chroma edge class indicating a direction of a chroma edge of the current block;

when the offset type information of the luma component of the current block indicates a band offset type, generating the luma offset values and a luma band class indicating a start location of bands of the luma component of the current block; and

when the offset type information of the chroma component of the current block indicates the band offset type, generating the chroma offset values and a chroma band class indicating a start location of bands of the chroma component of the current block.

7. A non-transitory computer-readable storage medium storing a bitstream, the bitstream comprising:

left offset merge information indicating whether an offset parameter of a current block to be derived from an offset parameter of an left block; and

upper offset merge information indicating whether an offset parameter of a current block to be derived from an offset parameter of an upper block,

wherein:

the upper offset merge information is included in the bitstream when the left offset merge information indicates that the offset parameter of the current block is not determined according to the offset parameter of the left block,

the bitstream further includes offset type information of a luma component of the current block and offset type information of a chroma component of the current block are included when the upper offset merge information indicates that the offset parameter of the current block is not determined according to the offset parameter of the upper block,

when the offset type information of the luma component of the current block indicates an edge offset type, the bitstream further includes luma offset values and a luma edge class indicating a direction of a luma edge of the current block,

when the offset type information of the chroma component of the current block indicates the edge offset type, the bitstream further includes chroma offset values and a chroma edge class indicating a direction of a chroma edge of the current block,

when the offset type information of the luma component of the current block indicates a band offset type, the bitstream further includes the luma offset values of the luma component of the current block, and

when the offset type information of the chroma component of the current block indicates the band offset type, the bitstream further includes the chroma offset values of the chroma component of the current block.

8. A non-transitory computer-readable storage medium storing a bitstream, the bitstream comprising:

left offset merge information indicating whether an offset parameter of a current block to be derived from an offset parameter of an left block; and

upper offset merge information indicating whether an offset parameter of a current block to be derived from an offset parameter of an upper block,

wherein:

the upper offset merge information is included in the bitstream when the left offset merge information indicates that the offset parameter of the current block is not determined according to the offset parameter of the left block,

the bitstream further includes offset type information of a luma component of the current block and offset type information of a chroma component of the current block are included when the upper offset merge information indicates that the offset parameter of the current block is not determined according to the offset parameter of the upper block,

when the offset type information of the luma component of the current block indicates an edge offset type, the bitstream further includes luma offset values and a luma edge class indicating a direction of a luma edge of the current block,

when the offset type information of the chroma component of the current block indicates the edge offset type, the bitstream further includes chroma offset values and a chroma edge class indicating a direction of a chroma edge of the current block,

when the offset type information of the luma component of the current block indicates a band offset type, the bitstream further includes absolute values of the luma offset values and signs of the luma offset values indicating whether the luma offset values are positive or negative, and

when the offset type information of the chroma component of the current block indicates the band offset type, the bitstream further includes absolute values of the chroma offset values and signs of the chroma offset values indicating whether the chroma offset values are positive or negative.

9. A non-transitory computer-readable storage medium storing a bitstream, the bitstream comprising:

left offset merge information indicating whether an offset parameter of a current block to be derived from an offset parameter of an left block; and

upper offset merge information indicating whether an offset parameter of a current block to be derived from an offset parameter of an upper block,

wherein:

the upper offset merge information is included in the bitstream when the left offset merge information indicates that the offset parameter of the current block is not determined according to the offset parameter of the left block,

the bitstream further includes offset type information of a luma component of the current block and offset type information of a chroma component of the current block are included when the upper offset merge information indicates that the offset parameter of the current block is not determined according to the offset parameter of the upper block,

when the offset type information of the luma component of the current block indicates an edge offset type, the bitstream further includes luma offset values of the luma component of the current block,

when the offset type information of the chroma component of the current block indicates the edge offset type, the bitstream further includes chroma offset values of the chroma component of the current block,

when the offset type information of the luma component of the current block indicates a band offset type, the bitstream further includes the luma offset values and a luma band class indicating a start location of bands of the luma component of the current block, and

when the offset type information of the chroma component of the current block indicates the band offset type, the bitstream further includes the chroma offset values and a chroma band class indicating a start location of bands of the chroma component of the current block.

10. A non-transitory computer-readable storage medium storing a bitstream, the bitstream comprising:

left offset merge information indicating whether an offset parameter of a current block to be derived from an offset parameter of an left block; and

upper offset merge information indicating whether an offset parameter of a current block to be derived from an offset parameter of an upper block,

wherein:

the upper offset merge information is included in the bitstream when the left offset merge information indicates that the offset parameter of the current block is not determined according to the offset parameter of the left block,

the bitstream further includes offset type information of a luma component of the current block and offset type information of a chroma component of the current block are included when the upper offset merge information indicates that the offset parameter of the current block is not determined according to the offset parameter of the upper block,

when the offset type information of the luma component of the current block indicates an edge offset type, the bitstream further includes luma offset values of the luma component of the current block,

when the offset type information of the chroma component of the current block indicates the edge offset type, the bitstream further includes chroma offset values of the chroma component of the current block,

when the offset type information of the luma component of the current block indicates a band offset type, the bitstream further includes absolute values of the luma offset values, signs of the luma offset values indicating whether the luma offset values are positive or negative, and a luma band class indicating a start location of bands of the luma component of the current block, and

when the offset type information of the chroma component of the current block indicates the band offset type, the bitstream further includes absolute values of the chroma offset values, signs of the chroma offset values indicating whether the chroma offset values are positive or negative, and a chroma band class indicating a start location of bands of the chroma component of the current block.

11. A non-transitory computer-readable storage medium storing a bitstream, the bitstream comprising:

left offset merge information indicating whether an offset parameter of a current block to be derived from an offset parameter of an left block; and

upper offset merge information indicating whether an offset parameter of a current block to be derived from an offset parameter of an upper block,

wherein:

the upper offset merge information is included in the bitstream when the left offset merge information indicates that the offset parameter of the current block is not determined according to the offset parameter of the left block,

the bitstream further includes offset type information of a luma component of the current block and offset type information of a chroma component of the current block are included when the upper offset merge information indicates that the offset parameter of the current block is not determined according to the offset parameter of the upper block.