

CLAIMS

Claim 1

An image processing device comprising:

5 a decoding section configured to decode an encoded stream to generate quantized data;

a setting section configured to set, according to a parameter indicating whether to copy another matrix, a quantization matrix to be used when inversely quantizing the quantized data generated by the decoding section; and

10 an inverse quantization section configured to inversely quantize the quantized data generated by the decoding section using the quantization matrix set by the setting section.

Claim 2

The image processing device according to claim 1, wherein

15 in a case where the parameter indicates that another matrix is to be copied, the setting section sets the quantization matrix by copying the another matrix.

Claim 3

The image processing device according to claim 2, wherein

20 the setting section selects the another matrix to be copied according to identification information for identifying a copy source matrix.

Claim 4

The image processing device according to claim 3, wherein

25 the setting section selects the another matrix to be copied according to the identification information which is different for each size of the quantization matrix.

Claim 5

The image processing device according to claim 3, wherein

30 the setting section selects the another matrix to be copied according to the identification information that distinguishes different classes of quantization matrices.

Claim 6

The image processing device according to claim 5, wherein
the identification information distinguishes different classes of quantization
5 matrices by at least one of a prediction mode and a color component.

Claim 7

The image processing device according to claim 3, wherein
the setting section set a default matrix as the quantization matrix in a case
10 where the identification information for identifying a copy source matrix is
interpreted as indicating the quantization matrix itself which is to be set.

Claim 8

The image processing device according to claim 3, wherein
15 the identification information identifies one of the quantization matrices
previously set by the setting section as a copy source matrix.

Claim 9

The image processing device according to claim 1, wherein
20 the decoding section acquires the parameter from a picture parameter set of
the encoded stream.

Claim 10

An image processing method comprising:
25 decoding an encoded stream to generate quantized data;
setting, according to a parameter indicating whether to copy another matrix,
a quantization matrix to be used when inversely quantizing the generated quantized
data ; and
inversely quantizing the generated quantized data using the set quantization
30 matrix.

Claim 11

An image processing device comprising:

a quantization section configured to quantize image data using a quantization matrix to generate quantized data;

5 a generating section configured to generate a parameter indicating whether to copy another matrix in order to set the quantization matrix to be used when inversely quantizing the quantized data; and

an encoding section configured to generate an encoded stream by encoding the parameter generated by the generating section and the quantized data generated
10 by the quantization section.

Claim 12

The image processing device according to claim 11, wherein

in a case where the quantization matrix can be set by copying another matrix,
15 the generating section generates the parameter indicating that another matrix is to be copied.

Claim 13

The image processing device according to claim 12, wherein

20 the generating section generates identification information for identifying a copy source matrix, and

the encoding section encodes the identification information generated by the generating section.

25 Claim 14

The image processing device according to claim 13, wherein

the generating section generates the identification information which is different for each size of the quantization matrix.

30 Claim 15

The image processing device according to claim 13, wherein

the generating section generates the identification information that distinguishes different classes of quantization matrices.

Claim 16

- 5 The image processing device according to claim 15, wherein
the identification information distinguishes different classes of quantization matrices by at least one of a prediction mode and a color component.

Claim 17

- 10 The image processing device according to claim 13, wherein
in a case where a default matrix is to be used as the quantization matrix, the generating section generates the identification information interpreted such that the quantization matrix itself which is to be set is indicated as a copy source.

15 Claim 18

- The image processing device according to claim 13, wherein
the identification information identifies one of the quantization matrices previously used by the quantization section as a copy source matrix.

20 Claim 19

- The image processing device according to claim 11, further comprising:
a transmitting section that transmits the parameter encoded by the encoding section within a picture parameter set of the encoded stream.

25 Claim 20

- An image processing method comprising:
quantizing image data using a quantization matrix to generate quantized data;
generating a parameter indicating whether to copy another matrix in order to
30 set the quantization matrix to be used when inversely quantizing the quantized data;
and

generating an encoded stream by encoding the parameter and the generated quantized data .

CLAIMS

Claim 1

An image processing device comprising:

an acquiring section configured to acquire quantization matrix parameters
5 from an encoded stream in which the quantization matrix parameters defining a
quantization matrix are set within a parameter set which is different from a sequence
parameter set and a picture parameter set;

a setting section configured to set, based on the quantization matrix
parameters acquired by the acquiring section, a quantization matrix which is used
10 when inversely quantizing data decoded from the encoded stream; and

an inverse quantization section configured to inversely quantize the data
decoded from the encoded stream using the quantization matrix set by the setting
section.

15 Claim 2

The image processing device according to claim 1, wherein

the parameter set containing the quantization matrix parameters is a
common parameter set within which other encoding parameters relating to encoding
tools other than a quantization matrix can also be set, and

20 the acquiring section acquires the quantization matrix parameters when the
quantization matrix parameters are set within the common parameter set.

Claim 3

The image processing device according to claim 2, wherein

25 the acquiring section determines whether the quantization matrix parameters
are set within the common parameter set by referencing a flag included in the
common parameter set.

Claim 4

30 The image processing device according to claim 2, wherein
the common parameter set is an adaptation parameter set.

Claim 5

The image processing device according to claim 4, wherein
in a case where a reference to a first adaptation parameter set is included in
5 a second adaptation parameter set decoded after the first adaptation parameter set, the
setting section reuses a quantization matrix set based on the quantization matrix
parameters acquired from the first adaptation parameter set as a quantization matrix
corresponding to the second adaptation parameter set.

10 Claim 6

The image processing device according to claim 5, wherein
in a case where a reference to a third adaptation parameter set is included
within the third adaptation parameter set, the setting section sets a default
quantization matrix as a quantization matrix corresponding to the third adaptation
15 parameter set.

Claim 7

The image processing device according to claim 1, wherein
in a case where a copy parameter instructing to copy a first quantization
20 matrix for a first parameter set is included in a second parameter set, the setting
section sets a second quantization matrix by copying the first quantization matrix.

Claim 8

The image processing device according to claim 7, wherein
25 each parameter set that includes the quantization matrix parameters has an
identifier that identifies each parameter set, and
the copy parameter includes an identifier of a parameter set of a copy source.

Claim 9

30 The image processing device according to claim 8, wherein
each parameter set includes quantization matrix parameters that respectively

define a plurality of classes of quantization matrices, and

the copy parameter includes a class parameter designating a class of the first quantization matrix.

5 Claim 10

The image processing device according to claim 8, wherein

in a case where the identifier of the parameter set of the copy source included in the third parameter set is equal to an identifier of the third parameter set, the setting section sets a default quantization matrix as a third quantization matrix for
10 the third parameter set.

Claim 11

The image processing device according to claim 7, wherein

in a case where a size of the second quantization matrix is larger than a size
15 of the first quantization matrix, the setting section sets the second quantization matrix by interpolating elements of the copied first quantization matrix.

Claim 12

The image processing device according to claim 7, wherein

20 in a case where a size of the second quantization matrix is smaller than a size of the first quantization matrix, the setting section sets the second quantization matrix by decimating elements of the copied first quantization matrix.

Claim 13

25 The image processing device according to claim 7, wherein

in a case where a residual designation parameter designating residual components of a quantization matrix which is copied is included in the second parameter set, the setting section sets the second quantization matrix by adding the residual components to the copied first quantization matrix.

30

Claim 14

The image processing device according to claim 1, wherein
each parameter set that includes the quantization matrix parameters has a
parameter set identifier that identifies each parameter set, and

the inverse quantization section uses, for each slice, a quantization matrix
5 set by the setting section based on quantization matrix parameters included in a
parameter set identified by the parameter set identifier designated in a slice header.

Claim 15

The image processing device according to claim 7, wherein
10 the parameter set containing the quantization matrix parameters further
includes other encoding parameters relating to encoding tools other than a
quantization matrix.

Claim 16

15 The image processing device according to claim 15, wherein
the quantization matrix parameters and the other encoding parameters are
grouped by a sub-identifier defined separately from a parameter identifier that
identifies each parameter set, and
the acquiring section acquires the quantization matrix parameters using the
20 sub-identifier.

Claim 17

The image processing device according to claim 16, wherein
a combination identifier associated with a combination of a plurality of the
25 sub-identifiers is defined in the parameter set or another parameter set, and
the acquiring section acquires the combination identifier designated in a
slice header of each slice, and acquires the quantization matrix parameters using the
sub-identifiers associated with the acquired combination identifier.

30 Claim 18

An image processing method comprising:

acquiring quantization matrix parameters from an encoded stream in which the quantization matrix parameters defining a quantization matrix are set within a parameter set which is different from a sequence parameter set and a picture parameter set;

5 setting, based on the acquired quantization matrix parameters, a quantization matrix which is used when inversely quantizing data decoded from the encoded stream; and

 inversely quantizing the data decoded from the encoded stream using the set quantization matrix.

10

Claim 19

 An image processing device comprising:

 a quantization section configured to quantize data using a quantization matrix;

15 a setting section configured to set quantization matrix parameters that define a quantization matrix to be used when the quantization section quantizes the data; and

 an encoding section configured to encode the quantization matrix parameters set by the setting section within a parameter set which is different from a sequence parameter set and a picture parameter set.

20

Claim 20

 An image processing method comprising:

 quantizing data using a quantization matrix;

25 setting quantization matrix parameters that define the quantization matrix to be used when quantizing the data; and

 encoding the set quantization matrix parameters within a parameter set which is different from a sequence parameter set and a picture parameter set.