

CLAIMS

1. An image decoding device which

determines whether or not a decoded block adjacent to the left of a block to be decoded, and an encoded block adjacent above the block to be decoded, can be referenced,

selects, in the event that the decoded block adjacent to the left and the decoded block adjacent above can be referenced, an average value of a quantization parameter of the decoded block adjacent to the left and a quantization parameter the decoded block adjacent above, as a prediction quantization parameter,

selects, in the event that the decoded block adjacent to the left and the decoded block adjacent above cannot be referenced, a prediction quantization parameter using a quantization parameter of a block not adjacent to the block to be decoded;

the image decoding device comprising:

an information obtaining unit configured to extract difference information indicating difference as to the selected prediction quantization parameter, from stream information; and

a quantization parameter calculating unit configured to calculate a quantization parameter of the block to be decoded, from the prediction quantization parameter and the difference information.

2. An image decoding method, comprising:

a procedure of determining whether or not a decoded block adjacent to the left of a block to be decoded, and an encoded block adjacent above the block to be decoded, can be referenced,

selecting, in the event that the decoded block adjacent to the left and the decoded block adjacent above can be referenced, an average value of a quantization parameter of the decoded block adjacent to the left and a quantization parameter the decoded block adjacent above, as a prediction quantization parameter,

selecting, in the event that the decoded block adjacent to the left and the decoded block adjacent above cannot be referenced, a prediction quantization parameter using a quantization parameter of a block not adjacent to the block to be decoded;

a procedure of extracting difference information

indicating difference as to the selected prediction quantization parameter, from stream information; and

a procedure of calculating a quantization parameter of the block to be decoded, from the prediction quantization parameter and the difference information.

3. An image encoding device, comprising:

a control unit configured to set a quantization parameter as to a block to be encoded;

an information generating unit configured to take quantization parameters of encoded blocks spatially or temporally adjacent to a block to be encoded, as selection candidates, select from the selection candidates a prediction quantization parameter in accordance to the set quantization parameter, and generate difference information indicating difference between the prediction quantization parameter and the set quantization parameters; and

an encoding unit configured to include the difference information in stream information generated by performing encoding processing of the block to be encoded, using the set quantization parameter.

4. The image encoding device according to Claim 3, wherein the information generating unit selects a quantization parameter of which the difference as to the set quantization parameter is the smallest, as the prediction quantization parameter.

5. The image encoding device according to Claim 4, wherein the information generating unit generates identification information indicating the order of blocks corresponding to the selected quantization parameter, with the adjacent encoded blocks in a predetermined order;

and wherein the encoding unit includes the identification information in the stream information.

6. The image encoding device according to Claim 5, wherein the information generating unit takes an order of array where priority is given to one of an encoded block adjacent to the left side, an encoded block adjacent above, and an encoded block temporally adjacent.

7. The image encoding device according to Claim 5, wherein the information generating unit can switch the order of array of adjacent encoded blocks.

8. The image encoding device according to Claim 3, wherein the information generating unit performs determination of selection candidates in an order set beforehand, and selects the prediction quantization parameter based on the determination result.

9. The image encoding device according to Claim 3, wherein the information generating unit is capable of selecting between processing of selecting a quantization parameter of which the difference as to the set quantization parameter is the smallest as the prediction quantization parameter, and processing of performing determination of selection candidates in an order set beforehand and selecting the prediction quantization parameter based on the determination result, and

generates determination information indicating the selected processing; and

wherein the encoding unit includes the determination information in the stream information.

10. The image encoding device according to Claim 3, wherein the information generating unit takes the selection candidates, having excluded from the adjacent encoded blocks at least blocks where quantization parameters are redundant or blocks where quantization using quantization parameters is not performed.

11. The image encoding device according to Claim 3, wherein, in the event that there is no selection candidate, the information generating unit generates difference information indicating difference between a quantization parameter of an initial value in a slice, and the set quantization parameters.

12. The image encoding device according to Claim 3, wherein the information generating unit includes a quantization parameter updated last in the selection candidates.

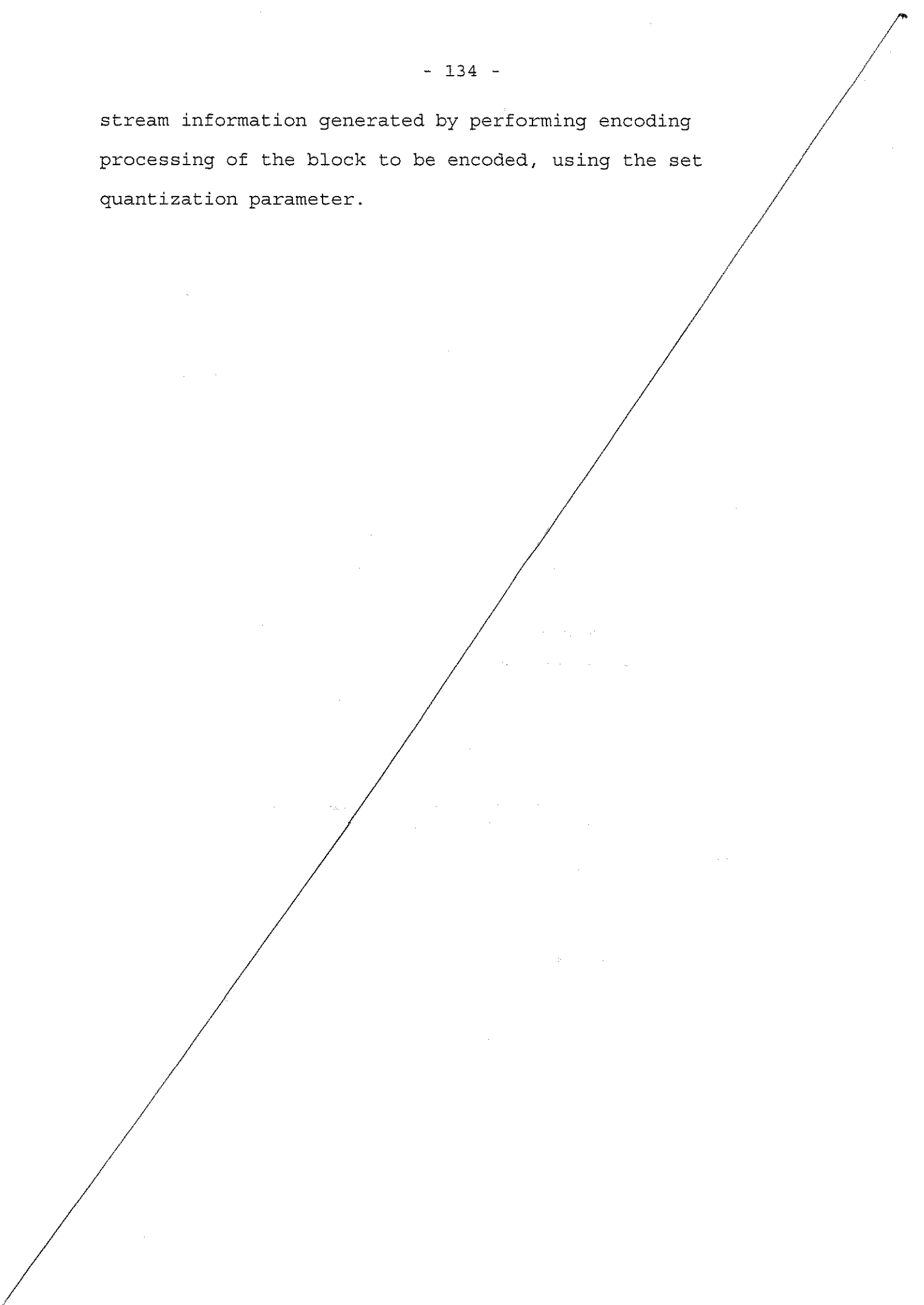
13. An image encoding method, comprising:

a process of setting a quantization parameter as to a block to be encoded;

a process of taking quantization parameters of decoded blocks spatially or temporally adjacent to a block to be decoded, as selection candidates, selecting from the selection candidates a prediction quantization parameter in accordance to the set quantization parameter, and generating difference information indicating difference between the prediction quantization parameter and the set quantization parameters; and

a process of including the difference information in

stream information generated by performing encoding processing of the block to be encoded, using the set quantization parameter.



CLAIMS

1. An image decoding method, comprising:
 - obtaining, when a block adjacent to the left of a current block and a block adjacent above the current block are referenceable, a prediction quantization parameter derived from an average value of a quantization parameter of the block adjacent to the left and a quantization parameter of the block adjacent above;
 - obtaining, when the block adjacent to the left and the block adjacent above are not referenceable, the prediction quantization parameter derived from a quantization parameter of a processing unit not adjacent to the current block;
 - obtaining, from bit stream information, a difference information indicating a difference between the obtained prediction quantization parameter and a quantization parameter of the current block; and
 - generating the quantization parameter of the current block, from the prediction quantization parameter and the difference information.
2. The image decoding method of Claim 1, wherein, when the block adjacent to the left and the block adjacent above are not referenceable, a quantization parameter of a previous block is derived to obtain the prediction quantization parameter.
3. The image decoding method of Claim 1, wherein the block is a coding unit, and the coding unit has a hierarchical structure defined by a hierarchical depth.
4. The image decoding method of Claim 3, further comprising:
 - performing an inverse quantization by a transform unit included in the coding unit, based on the calculated quantization parameter of the current block.
5. An information processing apparatus comprising:
 - a circuitry configured to:
 - obtain, when a block adjacent to the left of a current block and a block adjacent above the current block are referenceable, a prediction quantization parameter derived from an average value of a quantization parameter of the block adjacent to the left and a quantization parameter of the block adjacent above;

obtain, when the block adjacent to the left and the block adjacent above are not referenceable, the prediction quantization parameter derived from a quantization parameter of a processing unit not adjacent to the current block;

obtain, from bit stream information, a difference information indicating a difference between the obtained prediction quantization parameter and a quantization parameter of the current block; and

generate the quantization parameter of the current block, from the prediction quantization parameter and the difference information.

6. The information processing apparatus of Claim 5, wherein, when the block adjacent to the left and the block adjacent above are not referenceable, a quantization parameter of a previous block is derived to obtain the prediction quantization parameter.

7. The information processing apparatus of Claim 5, wherein the block is a coding unit, and the coding unit has a hierarchical structure defined by a hierarchical depth.

8. The information processing apparatus of Claim 7, wherein the processing circuitry is further configured to:

perform an inverse quantization by a transform unit included in the coding unit, based on the calculated quantization parameter of the current block.

9. The information processing apparatus of claim 5, further comprising:

a video signal processing circuit,

wherein the processing circuitry is further configured to decode the current block according to the quantization parameter and obtain video data, and

wherein the video signal processing circuit is configured to perform video processing on the video data.

10. The information processing apparatus of claim 9, wherein the video processing performed on the video data comprises a noise reduction of the video data.

11. The information processing apparatus of claim 10, further comprising:

a display circuit configured to drive a display device to display the video data.

12. The information processing apparatus of claim 9, further comprising:
a display circuit configured to drive a display device to display the video data.
13. The information processing apparatus of claim 5, further comprising:
a demultiplexer configured to extract encoded video data and encoded audio data from a bit stream, wherein the encoded video data includes the bit stream information.
14. The information processing apparatus of claim 13, further comprising:
a tuner circuit configured to perform demodulation by choosing a desired channel from broadcast wave signals received at an antenna and obtain the bit stream including the encoded video data and the encoded audio data.
15. The information processing apparatus of claim 13, further comprising:
an audio signal processing circuit configured to perform predetermined processing on audio data obtained by decoding the encoded audio data.
16. The information processing apparatus of claim 15, wherein the predetermined processing performed on the audio data by the audio signal processing circuit comprises a noise reduction of the audio data.
17. The information processing apparatus of claim 16, further comprising:
an audio codec circuit configured to convert the audio data into analog audio signals.
18. The information processing apparatus of claim 15, further comprising:
an audio codec circuit configured to convert the audio data into analog audio signals.
19. The image decoding method of Claim 1, wherein the quantization parameter of the processing unit not adjacent to the current block is an initial value of a quantization parameter in a slice.
20. The information processing apparatus of Claim 5, wherein the quantization parameter of the processing unit not adjacent to the current block is an initial value of a quantization parameter in a slice.