Non-Patent Documents

Non-Patent Document 1: Benjamin Bross, Woo-Jin Han, Jens-Rainer Ohm, Gary J. Sullivan, Thomas Wiegand, "High efficiency video coding (HEVC) text specification draft 6", JCTVC-H1003 ver21, Joint Collaborative Team on Video Coding (JCT-VC) of ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG117th Meeting: Geneva, CH, 21-30 November, 2011

Non-Patent Document 2: Jizheng Xu, "AHG10: Selective inter-layer prediction signalling for HEVC scalable extension", JCTVC-J0239, Joint Collaborative Team on Video Coding (JCT-VC) of ITU-T SG 16 WP 3 and ISO/IEC JTC 1/SC 29/WG 1110th Meeting: Stockholm, SE, 11-20 July 2012

SUMMARY OF THE INVENTION

PROBLEMS TO BE SOLVED BY THE INVENTION

[0015]

However, in the conventional method, the information for controlling the on/off (on/off) of the prediction process between the layers has been generated and transmitted for every picture. Therefore, there has been a risk that the code amount would increase due to the transmission of the information to thereby deteriorate the encoding efficiency.

[0016]

Embodiments of the present invention suppress the deterioration in encoding efficiency.

SOLUTIONS TO PROBLEMS

[0016a]

According to a first aspect of the present invention, there is provided an image processing device comprising: an encoding unit that encodes the image by performing inter-layer prediction, which is prediction between a plurality of layers of the image, wherein the inter-layer prediction is performed on sublayers

ranging from the lowest sublayer to the sublayer specified by inter-layer prediction control information that controls whether to perform the inter-layer prediction using information related to a sublayer.

[0016b]

According to a second aspect of the present invention, there is provided an image processing method comprising: encoding the image by performing inter-layer prediction, which is prediction between a plurality of layers of the image, wherein the inter-layer prediction is performed on only sublayers ranging from the lowest sublayer to the sublayer specified by inter-layer prediction control information that controls whether to perform the inter-layer prediction using information related to a sublayer.

[0017]

Disclosed herein is an image processing device including: a reception unit that receives encoded data in which an image with a plurality of main layers is encoded,

CLAIMS

1. An image processing device comprising:

an encoding unit that encodes the image by performing inter-layer prediction, which is prediction between a plurality of layers of the image, wherein the inter-layer prediction is performed on sublayers ranging from the lowest sublayer to the sublayer specified by inter-layer prediction control information that controls whether to perform the inter-layer prediction using information related to a sublayer.

2. The image processing device according to claim 1, further comprising a transmission unit that transmits encoded data obtained by encoding by the encoding unit, and the inter-layer prediction control information.

3. The image processing device according to claim 2, wherein if a current picture of a current main layer belongs to the sublayer specified as the sublayer for which the inter-layer prediction is performed by the inter-layer prediction control information, the encoding unit encodes the image data of the current picture using the inter-layer prediction.

4. The image processing device according to claim 3, wherein

the inter-layer prediction control information specifies a highest sublayer for which the inter-layer prediction is allowed, and

the encoding unit encodes using the inter-layer prediction, the image data of the picture belonging to the sublayers from a lowest sublayer to the highest sublayer specified by the inter-layer prediction control information.

5. The image processing device according to claim 1, wherein the inter-layer prediction control information is set for each main layer.

6. The image processing device according to claim 1, wherein the inter-layer prediction control information is set as parameters common to all the main layers.

7. The image processing device according to claim 1, wherein

the encoding unit performs inter-layer pixel prediction as pixel prediction between the plurality of main layers based on inter-layer pixel prediction control information that controls whether to perform the inter-layer pixel prediction and that is set as the inter-layer prediction control information,

the encoding unit performs inter-layer syntax prediction as syntax prediction between the plurality of main layers based on inter-layer syntax prediction control information that controls whether to perform the inter-layer syntax prediction and that is set as the inter-layer prediction control information independently from the inter-layer pixel prediction control information, and

the transmission unit transmits the inter-layer pixel prediction control information and the inter-layer syntax prediction control information that are set independently from each other as the inter-layer prediction control information.

8. The image processing device according to claim 7, wherein

the inter-layer pixel prediction control information controls using the sublayer, whether to perform the inter-layer pixel prediction,

the encoding unit performs the inter-layer pixel prediction on only the sublayer specified by the inter-layer pixel prediction control information,

the inter-layer syntax prediction control information controls whether to perform the inter-layer syntax prediction for each picture or slice, and

the encoding unit performs the inter-layer syntax prediction on only the picture or slice specified by the inter-layer syntax prediction control information.

9. The image processing device according to claim 8, wherein the transmission unit transmits the inter-layer pixel prediction control information as a nal unit (nal_unit), a video parameter set (VPS (Video Parameter Set)), or an extension video parameter set (vps_extension).

10. The image processing device according to claim 8, wherein the transmission unit transmits the inter-layer syntax prediction control information as a nal unit (nal_unit), a picture parameter set (PPS (Picture Parameter Set)), or a slice header (SliceHeader).

11. An image processing method comprising:

encoding the image by performing inter-layer prediction, which is prediction between a plurality of layers of the image, wherein the inter-layer prediction is performed on sublayers ranging from the lowest sublayer to the sublayer specified by inter-layer prediction control information that controls whether to perform the inter-layer prediction using information related to a sublayer.