[Solution to Problem]

[0007]

Embodiments of the present application are provided in view of the forgoing.

[0008]

According to a first aspect of the present invention, there is provided an image processing apparatus including circuitry configured to:

generate, based on metadata including luminance conversion information and a capability of a display in an output destination, second luminance conversion information for adaptation of content in a first dynamic range to the display; and process the content in the first dynamic range based on the second luminance conversion information.

[0009]

According to a second aspect of the present invention, there is provided an image processing method including generating, by a processing device, based on metadata including luminance conversion information and a capability of a display in an output destination, second luminance conversion information for adaptation of content in a first dynamic range to the display; and processing, by the processing device, the content in the first dynamic range based on the second luminance conversion information.

[0010]

According to a third aspect of the present invention, there is provided an image processing apparatus including circuitry configured to:

acquire luminance conversion information for conversion of content in a first dynamic range into content in a second dynamic range; and generate metadata of content based on the luminance conversion information, in which the luminance conversion

information is based on an intension of a content producer for use in display mapping.

[0011]

According to a fourth aspect of the present invention, there is provided an image processing method including information acquiring, by a processing device, to acquire luminance conversion information for conversion of content in a first dynamic range into content in a second dynamic range; and metadata generating, by the processing device, to generate metadata of content based on the luminance conversion information, in which the luminance conversion information is based on an intension of a content producer for use in display mapping.

[0012]

Disclosed herein is an image processing apparatus including: an information acquisition unit configured to acquire luminance conversion information for conversion of content in a first dynamic range into content in a second dynamic range; and a metadata generation unit configured to generate metadata of content based on the luminance conversion information.

[0013]

According to an embodiment, the metadata generation unit of the image processing apparatus is configured to generate the metadata including a relationship between luminance values before and after conversion from the first dynamic range into the second dynamic range at one or more points.

[0014]

According to an embodiment, the image processing apparatus further includes a transmission unit configured to transmit the metadata while storing the metadata in a predetermined transmission container.

[0015]

According to an embodiment, the transmission unit of the image processing apparatus is configured to transmit the metadata expressing luminance conversion information in a linear luminance value.

[0016]

According to an embodiment, the transmission unit of the image processing apparatus is configured to store the metadata into knee_function_info SEI of the content.

[0017]

According to an embodiment, the transmission unit of the image processing apparatus is configured to transmit the metadata expressing luminance conversion information in a code value.

[0018]

According to an embodiment, the transmission unit of the image processing apparatus is configured to store the metadata into Tone_mapping_info SEI of the content.

[0019]

Also, according to an embodiment, an image processing apparatus includes: a metadata processing unit configured to generate, based on metadata including luminance

conversion information for adaptation of the content in the first dynamic range to a display in an output destination; and a content processing unit configured to process the content in the first dynamic range based on the second luminance conversion information.

[0020]

According to an embodiment, the metadata processing unit of the image processing apparatus is configured to generate a conversion table to convert a luminance value in the first dynamic range into a luminance value in the display with a predetermined peak luminance based on the metadata including a relationship between luminance values before and after conversion from the first dynamic range into the second dynamic range at one or more points, and the content processing unit is configured to convert luminance of the content in the first dynamic range based on the conversion table.

[0021]

According to an embodiment, the metadata processing unit of the image processing apparatus is configured to generate the second luminance conversion information based on metadata stored in a predetermined transmission container.

[0022]

According to an embodiment, the metadata processing unit of the image processing apparatus is configured to generate the second luminance conversion

information based on the metadata expressing luminance conversion information in a linear luminance value, and the content processing unit is configured to perform processing with respect to a luminance signal, on which electro-optical linear conversion processing is performed, based on the second luminance conversion information.

[0023]

According to an embodiment, the metadata processing unit of the image processing apparatus is configured to generate the second luminance conversion information based on metadata stored in knee_function_info SEI of the content.

[0024]

According to an embodiment, the metadata processing unit of the image processing apparatus is configured to generate the second luminance conversion information based on the metadata expressing luminance conversion information in a code value, and the content processing unit is configured to perform processing with respect to a luminance code value, on which electro-optical linear conversion processing is performed, based on the second luminance conversion information.

[0025]

According to an embodiment, the metadata processing unit of the image processing apparatus is configured to generate the second luminance conversion information based on metadata stored in Tone_mapping_info SEI of the content.

[0026]

According to an embodiment, when peak luminance of the display is higher than peak luminance of the first dynamic range, the metadata processing unit of the image processing apparatus is configured not to generate the second luminance conversion information and not to make the content processing unit perform processing of the content in the first dynamic range.

[0027]

Also, according to an embodiment, an image processing method includes: information acquiring to acquire luminance conversion information for conversion of content in a first dynamic range into content in a second dynamic range; and metadata generating to generate metadata of content based on the luminance conversion information.

[0028]

Also, according to an embodiment, an image processing method includes: metadata processing to generate, based on metadata including luminance conversion information for conversion of content in a first dynamic range into content in a second dynamic range, second luminance conversion information for adaptation of the content in the first dynamic range to a display in an output destination; and content processing to process the content in the first dynamic range based on the second luminance conversion information.

[Advantageous Effects of Invention]

[0029]

According to embodiments of the present invention,

a superior image processing apparatus and image processing method which suitably provide information related to luminance conversion of an image or which can suitably perform dynamic range conversion of an image based on provided information related to luminance conversion can be provided.

[0030]

Note that an effect described in the present description is just an example and an effect of the present technology is not limited thereto. Also, there is a case where the present technology has an additional effect other than the above-described effect.

[0031]

A further different aspect, characteristic, or advantage of the technology disclosed in the present description will be understood in a detail description based on an embodiment or attached drawings described later.

[Brief Description of Drawings]

[0032]

[Fig. 1]

Fig. 1 is a view schematically illustrating a configuration of an image providing system 100 to which a technology disclosed in the present description is applied.

[Fig. 2]

Fig. 2 is a view schematically illustrating a workflow in which HDR content is processed on a side of an image providing apparatus 200 (or content production side).

[Fig. 3]

Fig. 3 is a view schematically illustrating a workflow in which HDR content is processed on a side of an image utilization