CERTIFICATION

I, Takayoshi Hongo, Toranomon East Bldg., No. 7-13, Nishi-Shimbashi 1-chome, Minato-ku, Tokyo, Japan, do hereby certify that I am conversant with the English and Japanese languages and am a competent translator thereof, and I further certify that to the best of my knowledge and belief the attached English translation is a true and accurate translation made by me of the Japanese Unexamined Patent Application Publication JP 11-261868 published on September 24, 1999.

Signed this on the 20th day of March, 2014

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(54) [Title of the Invention] FISHEYE LENS CAMERA APPARATUS, AND IMAGE DISTORTION CORRECTION METHOD AND IMAGE EXTRACTION METHOD THEREFOR

(57) [Abstract]

[Object] The present invention relates to a fisheye lens camera apparatus, and an image distortion correction method and an image extraction method therefor, in which an image deformation process of correcting distortion of a fisheye lens image is performed at high speed in a case where a fisheye lens camera is installed at any installation angle, and a moving figure such as a person's figure is detected and is extracted accurately so as to be displayed on a monitor television or the like with high accuracy.

[Solving Means] A configuration is provided in which an image captured by a fisheye lens 1-1 and a CCD imaging device 1-2 is stored in a picture memory 1-3, and an image correction processing unit 1-4 operates coordinate transform for correcting an installation angle of a fisheye lens camera and coordinate transform for correcting distortion of a fisheye lens image in combination with each other, and a fisheye lens image of equal area projection is transformed through mapping at high speed. In addition, a configuration is provided in which weighting corresponding to a region in the fisheye lens image is performed, a feature amount of a person's figure or the like is extracted, and a display area is extracted.

[Claims]

[Claim 1]

A fisheye lens camera

an image correction

distortion of an image capt

wherein the image cor

coordinate transform for co

the fisheye lens camera and c

distortion of a fisheye len

other.

[Claim 2]

The fisheye lens camer

wherein the image correc

coordinate transform for co

lens image of equal area ma

[Claim 3]

A fisheye lens camera

an image correction

distortion of an image capt

wherein parameters

fisheye lens image, such as

image, an aspect ratio of th

of a fisheye lens image area

fisheye lens image itself, a

image is corrected using th

[Claim 4]

A fisheye lens camera apparatus which extracts a moving figure from an image captured by a fisheye lens camera, wherein regions are unified using a mutual positional relationship in a fisheye lens image so as to extract a region in which the figure varies.

[Claim 5]

A fisheye lens camera apparatus which extracts a moving figure from an image captured by a fisheye lens camera, wherein a fisheye lens image is transformed into a transversely long picture having a panorama form, a signal of an inter-frame difference of the picture or a signal in which an inter-frame difference and an in-frame difference are combined is extracted, a region is extracted using the signal, and regions of a plurality of moving figures are extracted together.

[Claim 6]

A fisheye lens camera apparatus which extracts a moving figure from an image captured by a fisheye lens camera, wherein an operation of extracting a feature amount of a signal of an inter-frame difference, a signal in which an inter-frame difference and an in-frame difference are combined, or the like is performed based on a picture of a fisheye lens image, and, in a region extraction process for a feature detection region, address transform between polar coordinates and orthogonal coordinates is performed and inside of the picture of the

fisheye lens image is scann
plurality of moving figures f
lens image.

[Claim 7]

A fisheye lens camera
figure from an image captured
in relation to regions of
obtained from a picture of
each person's figure is norn
shape of each figure is store
tracking a plurality of mov
based on the color informat

[Claim 8]

A fisheye lens camera
figure from an image captured
a region is extracted based
weighting factors which are
of distortion of a central p
fisheye lens image.

[Claim 9]

The fisheye lens camer
wherein a non-extracted reg
different value thereto as
correspond to the region in a
and the region is extracted

[Claim 10]

     An image distortion correction method for a fisheye lens camera, of correcting distortion of an image captured by the fisheye lens camera, comprising:

     a step of operating coordinate transform for correcting an installation angle of the fisheye lens camera and coordinate transform for correcting distortion of a fisheye lens image in combination with each other.

[Claim 11]

     The image distortion correction method for the fisheye lens camera, of correcting distortion of the image captured by the fisheye lens camera according to claim 10, wherein the step of operating coordinate transform includes a step of operating coordinate transform for correcting distortion of a fisheye lens image of equal area mapping.

[Claim 12]

     An image distortion correction method for a fisheye lens camera, of correcting distortion of an image captured by the fisheye lens camera, comprising:

     a step of extracting parameters for correcting distortion of a fisheye lens image, such as a central position of a displayed image, an aspect ratio of the fisheye lens image, and a radius of a fisheye lens image area, from a captured fisheye lens image itself, and correcting distortion of the fisheye lens image using the parameters.

[Claim 13]

     An image extraction m of extracting a moving figu fisheye lens camera, compr

     a step of unifying r relationship in a fisheye le in which the figure varies

[Claim 14]

     An image extraction m of extracting a moving figu fisheye lens camera, compr

     a step of transformi transversely long picture h a signal of an inter-frame di in which an inter-frame diff are combined, extracting extracting regions of a plu

[Claim 15]

     An image extraction m of extracting a moving figu fisheye lens camera, compr

     a step of performing a amount of a signal of an in which an inter-frame differe combined, or the like based o

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