【CLAIMS】

【Claim 1】

An image processing method of processing a plurality of images into a single image, comprising following steps of:

using at least a left image, a center image, and a right image obtained from a plurality of cameras arranged in a row;

generating a left top-view image, a center top-view image, and a right top-view image based on the left image, the center image, and the right image, respectively;

generating one wide top-view image by merging the left top-view image, the center top-view image, and the right top-view image; and

generating and outputting the wide top-view image as a final wide image.

【Claim 2】

The image processing method of claim 1, wherein the left image, the center image, the right image, and the final wide image are perspective-view images each having one vanishing point, and the left top-view image, the center top-view image, the right top-view image, and the wide top-view image are top-view images having no vanishing points and showing bottoms as if viewed from above.

【Claim 3】

The image processing method of claim 2, wherein

the step of generating the left top-view image, the center top-view image, and the right top-view image based on the left image, the center image, and the right image, respectively, and the step of generating and outputting the wide top-view image as the final wide image use perspective transformation,

when a transformation matrix is used for the perspective transformation, the transformation matrix in the step of generating the left top-view image, the center top-

view image, and the right top-view image based on the left image, the center image, and the right image, respectively is an inverse matrix of the transformation matrix used in the step of generating and outputting the wide top-view image as the final wide image.

【Claim 4】

The image processing method of claim 3, wherein the step of generating one wide top-view image by merging the left top-view image, the center top-view image, and the right top-view image comprises a step of making a boundary area semi-transparent in an area where at least two images among the left top-view image, the center top-view image and the right top-view image are overlapped, and removing the other area, in the left top-view image, the center top-view image and the right top-view image.

【Claim 5】

The image processing method of claim 1, further comprising the step of obtaining at least the left image, the center image, and the right image from the plurality of cameras arranged in a row, and the method further comprising the steps of:

with regard to each of the left image, the center image, and the right image:

obtaining brightness information, saturation information, and hue information based on a certain single image obtained or generated in the previous steps;

obtaining inverted brightness information by inverting the obtained brightness information;

obtaining first correction information for correcting the brightness information based on the inverted brightness information;

generating transformed brightness information by applying the first correction information to the brightness information; and

generating an image corrected with the transformed brightness information, the

saturation information, and the hue information.

【Claim 6】

The image processing method of claim 5, further comprising the steps of:

obtaining second correction information for correcting the saturation information based on the inverted brightness information; and

generating transformed saturation information by applying the second correction information to the saturation information,

wherein the saturation information used in the step of generating the image corrected with the transformed brightness information, the saturation information, and the hue information is replaced with the transformed saturation information.

【Claim 7】

The image processing method of claim 6, wherein the step of obtaining the first correction information for correcting the brightness information based on the inverted brightness information or the step of obtaining the second correction information for correcting the saturation information comprises,

with respect to each pixel of the final wide image,

obtaining the first correction information for the brightness information, which is not zero, or the second correction information for the saturation information, which is not zero, when the inverted brightness information is greater than or equal to a threshold value.

【Claim 8】

The image processing method of claim 7, wherein the first correction information and the second correction information are different.

【Claim 9】

A computer readable recording medium recorded with a program for performing

the method according to any one of claims 1 to 8.

【Claim 10】

A computer program stored in a medium to perform the method according to any one of claims 1 to 8 in conjunction with hardware.

【Claim 11】

A robot control method comprising

adjusting a moving speed of the robot and a rotation speed of a cleaning brush based on the final wide image generated by processing the images obtained from the plurality of cameras provided in the robot by the image processing method according to any one of claims 1 to 8, through a control model established by learning any single image obtained or generated based on the image processing method according to any one of claims 1 to 8.

【Claim 12】

The robot control method of claim 11, wherein the step of adjusting the moving speed of the robot and the rotation speed of the cleaning brush comprises a step of informing an operator of the robot that the moving speed of the robot and the rotation speed of the cleaning brush are being adjusted,

wherein such informing comprises using at least one of a text, a picture, vibration, sound, and lighting.

【Claim 13】

A computer program for performing the method according to any one of claims 1 to 8.