

for example, this may be mounted within the radial thickness such that the reflective surface exposes half of the spherical member on both sides. According to this structure, a game may be played upon using both the front and back faces of the screen, and, for instance, the image from the front of the dinosaur will be displayed on the front face and the image from the rear of the dinosaur will be displayed when moving toward the back face of the screen. Thus, provided is a highly amusing game with realism. In addition, since the markers will be of the three shapes having a mirror surface relationship with respect to the vertical axis with the front face and back face of the screen, the front or back of the screen may be automatically detected merely by recognizing the image from the CCD camera, and it is not necessary to additionally provide a human body sensor for detecting the circular movement of the player.

[0262] (23) Moreover, although various shapes for markers may be considered, those basically containing the element of dotted light source is included in the concept of dotted light source.

[0263] In summary, the present invention was devised in view of the foregoing problems, and the object thereof is to provide an orientation marker capable of remotely measuring the movement, particularly the orientation, of a controller having a simple structure, which may be employed in a more sophisticated game, and which is highly versatile; an orientation detection device for remotely measuring the orientation (posture) of the controller with such orientation detection marker; and a video game device employing the above.

[0264] In order to achieve the foregoing object, the orientation detection marker according to the present invention is provided in either one of the device main body and a controller for performing input operations as being pointed to a screen of a display unit provided to the device main body for displaying images, for detecting the orientation of the controller with respect to the screen, and which supplies information for computing said orientation to a picture image generated by imaging means provided in the other of the device main body and the controller, wherein said orientation detection marker comprises a light source having a mode including biaxial direction information.

[0265] According to the foregoing structure, a picture image is generated with the imaging means provided to the device main body side and one of the controllers. An image of the orientation detection markers is contained in the picture image. Since the orientation detection marker includes biaxial direction information, in addition to the position information of the controller, and (rotation) inclination centered around the axis of orientation of the controller; that is, rotation angle information is also included in the picture image. Thus, the orientation of the controller with respect to the screen may be computed from this position information and rotation angle information.

[0266] Further, it is preferable that the two axes are orthogonal to each other. According to this, the computation will become simplified since it is no longer necessary to employ a trigonometric function for positional computation. According to the invention with the above features, the computation will become simplified since it is no longer necessary to employ a trigonometric function for positional computation and a positional information can be directly obtained thus the calculation can be simplified.

[0267] Moreover, it is preferable that the light source is formed of a plurality of dotted light sources. According to this, the orientation detection marker may be made simply and inexpensively by structuring it from a dotted light source capable of identifying biaxial direction information.

[0268] According to the invention with the above feature, the orientation detection marker may be made simply and inexpensively by structuring it from a dotted light source capable of identifying biaxial direction information and the positional information can be directly obtained, thus the calculation is made easy.

[0269] In addition, the light source may emit light of a specific color. According to this, employed may be a marker capable of emitting light of a desired color in accordance with the purpose of use. According to the invention with the above features, employed may be a marker capable of emitting light of a desired color in accordance with the purpose of use.

[0270] Further, the plurality of dotted light sources may be formed by first and second light source units for specifying the first two points and second two points separated by a prescribed dimension on one axis and a third light source unit for specifying the third two points separated by a prescribed dimension on another axis being disposed on the orientation detection marker mounting section for mounting the orientation detection marker.

[0271] According to this, regarding the first to third light source units, since two will be in one axis direction and one will be in the other axis direction, specified are the respective positions of the first two points and the second two points of the first and second light source units from the image corresponding within the picture image as the mapping images with the imaging means and the position of the third two points of the third light source. Thus, detected will be the inclination of one axis in the axis periphery parallel at least to the other axis and the rotation angle against the reference angle position on the surface formed from the one axis and the other axis. If the arrangement position of the imaging means and the position of the device main body with respect to the imaging means is associated in advance, in the least, the orientation of the controller may be computed from the picture image. According to the invention claimed in claim 5, specified are the respective positions of the first two points and the second two points of the first and second light source units and the position of the third two points of the third light source from the image corresponding within the picture image. Thus, detected will be the inclination of one axis in the axis periphery parallel at least to the other axis and the rotation angle with respect to the reference angle position on the surface formed from the one axis and the other axis, and the orientation of the controller will be computed thereby.

[0272] Moreover, the dimension between the first two points and the dimension between the second two points may be set to be equal. According to this, the computation for detecting the orientation of the controller may be simplified. According to the invention with the above features, the computation for detecting the orientation of the controller may be simplified.

[0273] In addition, the first and second light source units may share the inner two dotted light sources on the axis.