line-of-sight YB.

[0031] More specifically, as illustrated in FIG. 2, a bridge detection device 49 is connected to the image providing device 4 via the external interface 43. For example, the bridge detection device 49 is a global positioning system (GPS) device that is installed in the vicinity of the vessel body front end in the sailing direction of the vessel body 2 and that detects the current position of the vessel body 2 using a distance measuring sensor, which detects the existence or absence of a bridge with laser light such as infrared light, or using a GPS satellite signal. In this connection, a part or whole of the bridge detection device 49 may be integrally formed with the image providing device 4.

[0032] The control unit 41 of the image providing device 4 monitors a measurement signal sent from the bridge detection device 49. When determining that the vessel body 2 is not in a bridge visible area with a predetermined distance, the control unit 41 transitions into the normal mode, thereby supplying advertising images that are not continuous at the boundary between the flat panel sets 32 to the displays 31.

[0033] By the way, the storage unit 45 of the image providing device 4 stores normal advertising image data for advertising images with the vertical and horizontal ratio adjusted in advance to 1:1, and bridge advertising image data. The playlist includes playback time information on a scheduled playback time or a duration from a playback start. The playlist also includes a normal advertisement identifier (ID) identifying the normal advertising image

is preferably set to a large value. In the case of a bridge having a short distance from the water surface, the threshold is preferably set to a small value. This is because, when viewed from a high position, an area where the water surface can be viewed at an almost right angle is expanded, and when viewed from a low position, the area where the water surface can be viewed at an almost right angle is narrowed.

[0038] The following describes the image display process that is performed by the control unit 41 of the image providing device 4 in accordance with the image display program, with reference to the flowchart of FIG. 4.

[0039] The control unit 41 of the image providing device 4 begins an advertising image playback process in response to a user operation on the operation input unit 46 or at a timer-set playback start time.

[0040] At step S1, the control unit 41 monitors the bridge detection device 49. At step S2, the control unit 41 determines whether the vessel body 2 is outside a bridge detection area. If an affirmative result is obtained, it means that there is no bridge nearby, and then the process proceeds to step S3.

[0041] At step S3, the control unit 41 performs a normal operation in a normal mode to supply normal advertising image data to the displays 31 in accordance with a playlist.

[0042] If a negative result is obtained at step S2, on the other hand, the process proceeds to step S4 in which the control unit 41 performs a bridge operation in a bridge mode to supply bridge advertising image data to the displays 31 in accordance with the playlist.

[0043] At step S5, the control unit 41 determines whether an end instruction has come, on the basis of an end instruction received via the operation input unit 46 and external interface 43 or the setting of the playlist. If a negative result is obtained, the process proceeds back to step S1, so that the control unit 41 keeps on the image display process.

[0044] If an affirmative result is obtained at step S5, the process proceeds to an end step, so that the control unit 41 completes the image display process.

[0045] Secomd Embodiment

A second embodiment will now be described. The second embodiment, which will be described with reference to FIGS. 5 and 6. In the second embodiment, components that are identical to those in the first embodiment are given the same reference numerals. Each component that has a counterpart in the first embodiment is given the reference numeral used in the first embodiment plus 100. The description of the identical components will be omitted.

[0046] As illustrated in FIGS. 5 and 6, a shipboard advertising system 101 of the second embodiment includes a telescopic movable screen set 106 and a projector 107.

[0047] The movable screen set 106 has two telescopic poles 161 that are telescopic in the vertical direction (Y direction), a screen 163 that is extended to match the length of the telescopic poles 161, and a storage container 162 for storing the screen 163 when the telescopic poles 161

are retracted.

[0048] One telescopic pole 161 is set on each side of an LED display set 3 in the longitudinal direction (X direction) of the vessel body 2, and is extended or retracted in the Y direction under the control of an image providing device 104.

[0049] The storage container 162 is a box-shaped member provided at the top of the LED display set 3 and is open at the top portion thereof. The storage container 162 has almost the same length in the X direction and the Z direction as the LED display set 3 at the top end of the LED display set 3.

[0050] The top end of the screen 163 is fixed near the top ends of the telescopic poles 161. The screen 163 is extended upward as the telescopic poles 161 are extended, and is stored in the storage container 162 as the telescopic poles 161 are retracted. The both sides of the screen 163 other than the top ends are not fixed to the telescopic poles 161, and thus get separated from the telescopic poles 161 and are stored in the storage container 162 as the telescopic poles 161 are retracted.

[0051] The screen 163 is not limited to a particular type, but a so-called mesh screen which is transparent and on which images can be projected from the rear or front side may preferably be used.

[0052] The projector 107 operates under the control of the image providing device 104, and projects, as advertising images, projection images supplied by the image providing device 104 onto the screen 163.

[0053] In the normal mode for the normal operation, the

properly at normal times and to let people on bridges (people who look down at the advertising images from above) view the advertising images properly when the vessel body approaches the bridges, which achieves effective advertising.

[0060] The shipboard advertising system of the present disclosure further includes

a bridge detection unit configured to detect a distance from a bridge,

wherein the image providing unit transitions into the second mode upon determining that the distance to the bridge is within a predetermined visible range.

[0061] This makes it possible to automatically detect the bridge and switch the mode without needing the advertisement provider to do anything.

[0062] In the shipboard advertising system,

the bridge detection unit is implemented using a global positioning system (GPS).

[0063] This makes it possible to detect the correct positional relationship with the bridge on the basis of the positional information of the vessel body 2 calculated using the GPS.

[0064] In the shipboard advertising system of the present disclosure,

the bridge detection unit is implemented using a distance measuring sensor.

[0065] This makes it possible to detect the correct positional relationship with the bridge using the distance measuring sensor.

to each other form a top-side angle ranging from 35° to 145°,

a first mode step of supplying the advertising images whose top sides are not continuous, to the first display unit and the second display unit, respectively, and

a second mode step of supplying the advertising images whose top sides are continuous, to the first display unit and the second display unit, respectively.

[0075] This makes it possible to arrange the display units so that they are visible from both the horizontal direction and the vertical upward direction, and to display the advertising images such that each advertising image on the first and second display unit is independently viewed in the first mode in which only one display unit is visible, and such that an advertising image is displayed using the first and second display units as one display unit in the second mode in which both display units are visible.

[0076] Third Embodiment

A second embodiment will now be described. The third embodiment differs from the first embodiment in that the third embodiment switches advertising images to be displayed according to the distance to a viewer. In the third embodiment, components that are identical to those in the first embodiment are given the same reference numerals. Each component that has a counterpart in the first embodiment is given the reference numeral used in the first embodiment plus 200. The description of the identical components will be omitted. While the third embodiment describes the arrangement illustrated in FIG. 8, where two flat panel sets 32 are placed in an upright position, this arrangement is applicable to any case

illustrated in FIGS. 1, 7, 9, and 10.

[0077] In a shipboard advertising system 201 of the third embodiment, the two flat panel sets 32 are placed in an upright position, thereby forming an LED display set 203, as illustrated in FIGS. 8 and 11. A camera 263 is provided on the LED display set 203 (flat panel set 32). In this connection, the second embodiment does not switch advertising images according to the detection of a bridge or the existence or absence of the bridge. In addition, an image providing device 204 supplies advertising images respectively selected for the two flat panel sets 32, to them.

[0078] As illustrated in FIG. 11, viewers PP may be located at a plurality of positions such as the lower part and top part of an embankment EB, and the viewing distances PD (PD1 to PD3) from each viewer PP viewing an advisement to a flat panel set 32 (camera263) are not equal. In addition, the viewing distance PD varies greatly due to some factors such as riverbanks present at different positions and the necessity to change the position of the vessel body 2 in the river width direction perpendicular to the traveling direction of the vessel body 2 due to the depth of water.

[0079] Therefore, the shipboard advertising system 201 switches advertising images to be displayed on the flat panel set 32, on the basis of a captured image obtained by the camera263. In this connection, the following describes the case where the image providing device 204 employs the streaming

playback method.

[0080] In the shipboard advertising system 201, the image providing device 204 and a server 205 are connected over a wireless network. The shipboard advertising system 201 selects advertising images according to the viewing distance PD based on the captured image data, and displays them on the flat panel set 32.

[0081] More specifically, the server 205 has a computer configuration, as illustrated in FIG. 12. A control unit 251 made up of a CPU, ROM, and RAM comprehensively controls the entire server 205, and performs an image display process according to an advertising image display program stored in advance in a storage unit 255. In this connection, an operation input unit 256 and display unit 257 are not mandatory.

[0082] The camera 263 is connected to the image providing device 204, and supplies captured image data to the image providing device 204 via an external interface 143 (not illustrated). This camera 263 is installed between the center of the top of the LED display set 203 and the edge thereof in the traveling direction (at the front portion in the traveling direction). Therefore, the camera 263 captures an image centered on a location in the front of the camera 263, closer to the front side in the traveling direction from the center of the flat panel set 32.

[0083] When receiving the captured image data from the camera 263, the control unit 241 of the image providing device 204 detects human bodies from the captured image data. In detecting human bodies, the faces of the human bodies or specific parts or whole (upper body, full body, or the

like) of the human bodies may be detected. As a method of detecting human bodies, a desired known method, such as bodyline detection after skin color detection, eye detection, or face detection may be employed. The following describes a case of using face detection.

[0084] Here, as illustrated in FIGS. 11 and 13, a captured image 171 based on captured image data has faces whose sizes depend on their viewing distances PD. Therefore, one advertising image is selected according to the detected face sizes from a plurality of prepared advertising images. The following describes a selection process that is performed by the control unit 241 of the image providing device 204 to select advertising images. Alternatively, the control unit 251 of the server 205 may perform the selection process.

[0085] The storage unit 245 of the image providing device 204 stores a selection table that associates a face size range and an advertising image with each other. When detecting the face of a human body, the control unit 241 selects one advertising image associated with the detected face size with reference to the selection table, and supplies an advertisement selection signal to the server 205.

[0086] When receiving the advertisement selection signal, the server 205 selects advertising image data specified by the advertisement selection signal from the plurality of advertising image data stored in advance in the storage unit 255, and supplies the advertising image data to the image providing device 204. As a result, advertising images suitable for the viewing distance PD is displayed on the flat panel set 32.

[0087] For example, in the case where the viewing distance PD is short, advertising images with small-sized characters are displayed since the viewer are located nearby. In the case where the viewing distance PD is long, on the other hand, advertising images with large-sized characters are displayed since the viewer is located at a distance. In other words, a face size substantially indicates a viewing distance.

[0088] In the case where a plurality of viewers have a plurality of viewing distances PD, as illustrated in FIG. 13, the control unit 241 calculates the average value of face size, and selects advertising images corresponding to the calculated average value. This makes it possible to select advertising images optimal for as many viewers as possible and to allow the viewers to view the optimal advertising images.

[0089] At this time, if a face size is smaller than a preset lower limit size, this face size may be excluded from the average value calculation. This makes it possible to select advertising images optimal for many viewers remaining after viewers who are hard to view the advertising images and are thus unlikely to get appealed by the advertisements are excluded.

[0090] The following describes the image display process performed by the control unit 241 of the image providing device 204, with reference to the flowchart of FIG. 14.

[0091] The control unit 241 begins the image display process at a start step, and the process proceeds to next step S21.

[0092] At step S21, the control unit 241 detects the faces

of viewers as parts of the viewers from a received captured image, and measures their face sizes. Then, the process proceeds to next step S21. At step S21, the control unit 241 calculates the average face size from the measured face sizes. Then, the process proceeds to next step S23.

[0093] At step S23, the control unit 241 selects an advertising image corresponding to the average face size. Then, the process proceeds to next step S24. At step S24, the control unit 241 displays the selected advertising image data on a display unit. Then, the process proceeds to next step S25.

[0094] At step S25, the control unit 241 determines whether to complete the image display process. If a negative result is obtained here, the process proceeds back to step S21, so that the control unit 241 keeps on the process. If an affirmative result is obtained at step S25, on the other hand, the process proceeds to an end step, at which the control unit 241 completes the process.

[0095] Operation and Effects

The following describes features derived from the above-described third embodiment, along with their effects, etc., as necessary.

[0096] With the above configuration, a shipboard advertising system (shipboard advertising system 201) of the present disclosure includes:

a vessel body part (vessel body 2) capable of sailing on water;

a display unit (flat panel sets 32) disposed on the vessel body part;

a viewing distance calculation unit (control unit

241) configured to calculate a viewing distance from the display unit to a viewer;

an image selection unit (control unit 241) configured to select an advertising image corresponding to the viewing distance; and

an image providing unit configured to supply the selected advertising image to the display unit.

[0097] This makes it possible to display advertising images according to a viewing distance, which enhances the advertising effect by displaying the appropriate advertising images according the distance to the viewer.

[0098] The shipboard advertising system further includes a camera unit (camera 263) configured to capture an image of the viewer,

wherein the viewing distance calculation unit estimates the viewing distance on the basis of a part size (face size) of at least a part of the viewer detected from the captured image received from the camera unit.

[0099] This makes it easy to estimate the viewing distance on the basis of the part size of the viewer that changes depending on the viewing distance.

[0100] In the shipboard advertising system,

the viewing distance calculation unit estimates the viewing distance on the basis of an average value taken over part sizes of a plurality of viewers detected from the captured image.

[0101] The image providing unit supplies advertising images selected for the first display unit, to the first display unit, and advertising images selected for the second display unit, to the second display unit.