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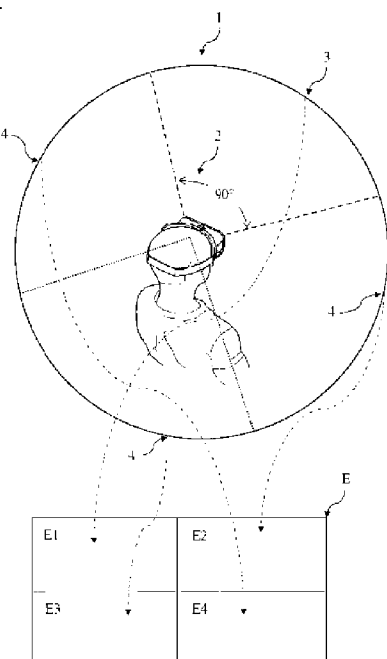
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(54) Title: A METHOD AND A SYSTEM FOR DISPLAYING VIRTUAL REALITY IMAGES ON A SCREEN

Fig. 1



(57) Abstract: The present invention relates to a method comprising the steps of calculating the angle of a field of view out of the angle of view displayed in horizontal axis in a virtual reality headset (2), dividing the angle of the field of view out of the angle of view displayed in horizontal axis, into selected angle segments, and displaying the image viewed in the virtual reality headset (3) and each image (4) on said selected angle segments separately on at least one screen; and to a system (1) in which said method is executed.



Description**A METHOD AND A SYSTEM FOR DISPLAYING VIRTUAL REALITY IMAGES ON
A SCREEN**

[0001] TECHNICAL FIELD

[0002] The present invention relates to a method and a system for displaying virtual reality images on a screen, particularly by sharing.

[0003] PRIOR ART

[0004] Nowadays, shopping malls and crowded community centers are also included in usage areas of virtual reality (VR). In such venues, virtual reality has become a tool which companies use for advertising purposes. A more active advertisement presentation is aimed by using virtual reality to display the users simulations of vacation destinations or tour programs, or to promote products through playing games. Usually, a crowded group of people gather around the user of a virtual reality headset, and watch the image transmitted to the user, in real-time on a television or a videowall. Since the image displayed on said television or videowall is exactly identical to the image the user sees on virtual reality, it is completely dependent on the virtual reality headset user. An advertisement item not viewed or missed by the user in virtual reality is also directly missed by the members of the watching group. Therefore, the images in the angles not viewed/displayed by the virtual reality user are also desired to be presented to a group of people watching the images viewed by such a user. In this case, instead of directing a virtual reality user to view all angles, there is a need for a system in which the three-dimensional universe in a virtual reality image is displayed to viewers outside.

[0005] By means of the method and the system of the invention, the images in the field of view of a user using a virtual reality headset as well as the images beyond the current field of view are enabled to be displayed on at least one screen by dividing them into selected angle segments (ranges). All images in a 3D universe of the virtual reality is thus enabled to be displayed to a group of viewers. As a result, the 3D universe wherein the user is can be observed in all dimensions thereof, and the advertisements on the images not seen by said user can be viewed on said screen by the

viewers. In addition, if the virtual reality is a video game, the bonuses not found (viewed) or the dangers not noticed (viewed) by the user in the game will be viewed by the viewers. The viewers thus will be able to direct the user, allowing realizing a presentation which is highly enjoyable to which the outside viewers can participate.

[0006] BRIEF DESCRIPTION OF THE INVENTION

[0007] The aim of the present invention is to realize a method and a system enabling displaying the images in the field of view of a user using a virtual reality headset as well as the images beyond the current field of view, on at least one screen by dividing them into selected angle segments (ranges).

[0008] DETAILED DESCRIPTION OF THE INVENTION

[0009] An exemplary embodiment of the system realized to achieve the aims of the present invention is illustrated in the accompanying drawing for a better understanding. The details of the invention should be examined considering the entirety of the specification. Wherein,
Figure 1: is a schematic view of an exemplary embodiment of the invention.

[0010] The elements in the figures are numbered individually and the correspondence of these numbers are given hereinafter.

1. System
2. Angle of view displayed in horizontal axis in the virtual reality headset
3. Image displayed in the virtual reality headset
4. Image on a selected angle segment

[0011] E. Display wall

E1: First screen

E2: Second screen

E3: Third screen

E4: Fourth screen

[0012] In the method of the invention, the angle out of the angle of view (field of view) displayed in horizontal axis in a virtual reality headset (2) (the angle of view in horizontal axis of the image provided to the user with the headset) is calculated. Said calculation can preferably be achieved by

subtracting the angle of view displayed in horizontal axis in the virtual reality headset (2) from 360° . The angle of the field of view out of the angle of view displayed in horizontal axis, can be divided into selected (preferably equal) angle segments. The image viewed in the virtual reality headset (3) and each image (4) on said selected angle segments are displayed separately on at least one screen. In the preferred embodiment of the invention, the image viewed in the virtual reality headset (3) and each image (4) on said selected angle segments are displayed separately by being shared on each screen disposed on a videowall (E). In an embodiment of the invention, Miracast or similar standards may be used to display images on screen.

- [0013] The above-mentioned method can be applied in a system (1) comprising at least one virtual reality headset and at least one screen.
- [0014] An exemplary embodiment for better understanding of the method and the system (1) of the invention is explained below in a non-limiting manner. In the exemplary embodiment, the angle of view displayed in horizontal axis (2) is assumed as 90° , each one of the selected angle segments are assumed as 90° and a videowall (E) is used comprising 4 screens (arranged for example in a 2x2 matrix) (Figure 1). Said angle of view displayed in horizontal axis (2), selected angle segments and the number of screens are not limited to the exemplary embodiment and may vary.
- [0015] The angle which the user cannot view on horizontal axis is an image of an angle of $360^\circ - 90^\circ = 270^\circ$.
- [0016] A first screen (E1) of the videowall (E) displays the 90° image viewed in the virtual reality headset (3) (the image displayed to the user, the image seen by the user, the image viewed in the field of view in an angle of 90° on horizontal axis in the virtual reality headset).
- [0017] A second screen (E2) of the videowall (E) displays the 90° image out of the field of view of the user within the angle segment positioned horizontally 90° clockwise of the field of view (the image on the right side of the user).
- [0018] A third screen (E3) of the videowall (E) displays the 90° image out of the field of view of the user within the angle segment positioned horizontally

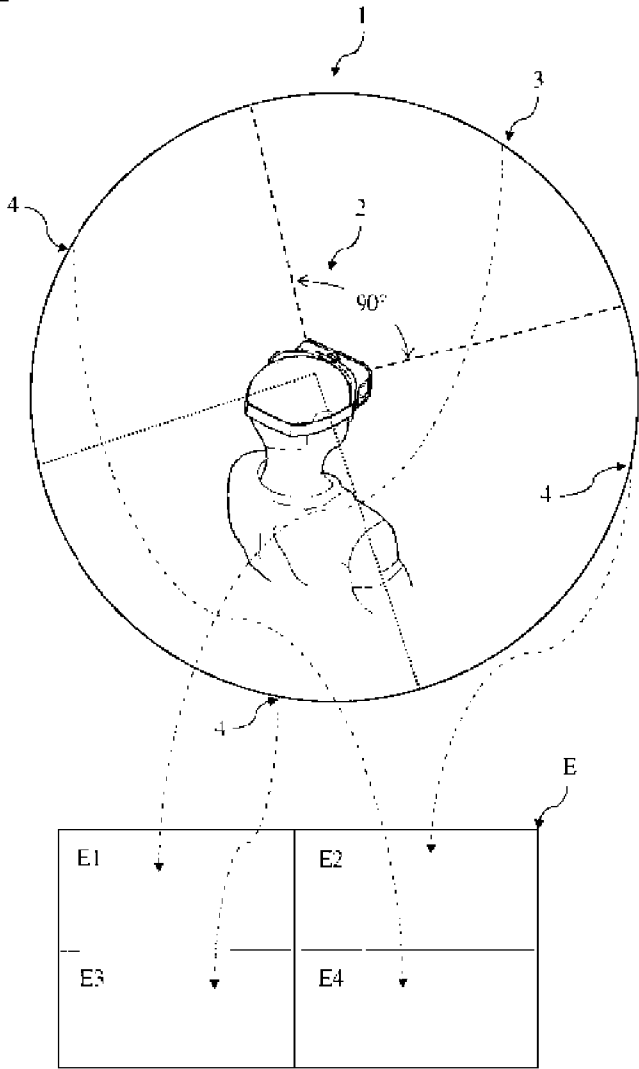
180° of the field of view (the image behind the user).

- [0019] A fourth screen (E4) of the videowall (E) displays the 90° image out of the field of view of the user within the angle segment positioned horizontally 90° counter-clockwise of the field of view (the image on the left side of the user).
- [0020] Another exemplary embodiment for better understanding of the method and the system (1) of the invention is explained below in a non-limiting manner. In the exemplary embodiment, the angle of view displayed in horizontal axis (2) is assumed as 200°, the selected angle segments are assumed as 15°, 15°, 15°, 35°, 35°, 15°, 15°, and 15°, and a videowall (E) is used comprising 9 screens. Said angle of view displayed in horizontal axis (2), selected angle segments and the number of screens are not limited to the exemplary embodiment and may vary.
- [0021] The angle which the user cannot view on horizontal axis is an image of an angle of $360^\circ - 200^\circ = 160^\circ$.
- [0022] A first screen of the videowall (E) displays the image viewed in the virtual reality headset (3) (the image displayed to the user, the image seen by the user, the image viewed in the field of view in an angle of 200° on horizontal axis in the virtual reality headset).
- [0023] A second, third, and a fourth screen of the videowall (E) display the images with angles of 15° on horizontal axis out of the field of view of the user.
- [0024] A fifth and a sixth screen of the videowall (E) display the images with angles of 35° on horizontal axis out of the field of view of the user.
- [0025] A seventh, eighth, and a ninth screen of the videowall (E) display the images with angles of 15° on horizontal axis out of the field of view of the user.

Claims

1. A method **comprising** the steps of,
 - calculating the angle of a field of view out of the angle of view displayed in horizontal axis in a virtual reality headset (2);
 - dividing the angle of the field of view out of the angle of view displayed in horizontal axis, into selected angle segments; and
 - displaying the image viewed in the virtual reality headset (3) and each image (4) on said selected angle segments separately on at least one screen.
2. A method according to claim 1, **comprising** a screen which is a videowall (E) having a plurality of screens.
3. A method according to claim 1, **comprising** the step of displaying the image viewed in the virtual reality headset (3) and each image (4) on said selected angle segments separately by being shared on each one of the screens comprised by the videowall (E).
4. A system (1) in which the method according to any one of the preceding claims is executed, **comprising** at least one virtual reality headset and at least one screen.

Fig. 1



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A. CLASSIFICATION OF SUBJECT MATTER

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B. FIELDS SEARCHED

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	Nick Greene: "7 CES Tech Innovations and What They Mean For You, the Humble Consumer Mental Floss", 13 January 2017 (2017-01-13), XP055565117, Retrieved from the Internet: URL: http://mentalfloss.com/article/90777/7-ces-tech-innovations-and-what-they-mean-you-humble-consumer [retrieved on 2019-03-06] Section 4; figure 1 ----- -/-	1-4



Further documents are listed in the continuation of Box C.



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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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Information on patent family members

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