Title: METHODS AND APPARATUS FOR 3D IMAGE RENDERING

Abstract: Methods and apparatus for making and using environmental measurements are described. Environmental information captured using a variety of devices is processed and combined to generate an environmental model which is communicated to customer playback devices. A UV map which is used for applying, e.g., wrapping, images onto the environmental model is also provided to the playback devices. A playback device uses the environmental model and UV map to render images which are then displayed to a viewer as part of providing a 3D viewing experience. In some embodiments updated environmental model is generated based on more recent environmental measurements, e.g., performed during the event. The updated environmental model and/or difference information for updating the existing model, optionally along with updated UV map(s), is communicated to the playback devices for use in rendering and playback of subsequently received image content. By communicating updated environmental information improved 3D simulations are achieved.

FIGURE 17
before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(88) Date of publication of the international search report:
27 October 2016
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

G06T 15/00 (2011.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

G06T 15/00, 15/50, 17/20, 19/00, G06F 17/50

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)

PatSearch (RUPTO internal), USPTO, PAJ, Esp@ccnet, DWPI, EAPATIS, PATENTSCOPE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
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<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
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</tr>
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<tbody>
<tr>
<td>X</td>
<td>ZHANG Cha et al. Multi-View Imaging: Capturing and Rendering Interactive Environments. Computer Vision for Interactive and Intelligent Environment (CVII'E05), 17-18 Nov. 2005, p. 3, 4, fig. 5</td>
<td>1, 13, 14</td>
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[X] Further documents are listed in the continuation of Box C. See patent family annex.

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Date of the actual completion of the international search

07 June 2016 (07.06.2016)

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<tr>
<td>Y</td>
<td>GUANGWEI Yang et al. 3D object relighting based on multi-view stereo and image based lighting techniques. Conference Paper, June 2009</td>
<td>10-11, 17-18</td>
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<td>Y</td>
<td>EP 1271415 A1 (GATEWAY, INC.) 02.01.2003, par. [0031], [0034]</td>
<td>11, 18</td>
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<td>A</td>
<td>RU 2012156375 A (KUZNETSOV PETR PAVLOVICH et al.) 27.06.2014</td>
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