(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
18 May 2012 (18.05.2012)

WIPO | PCT

(10) International Publication Number
WO 2012/064010 A4

(51) International Patent Classification:
H04N 13/00 (2006.01)

(21) International Application Number:
PCT/KR2011/005795

(22) International Filing Date:
9 August 2011 (09.08.2011)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10-2010-0111278
10 November 2010 (10.11.2010) KR

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(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

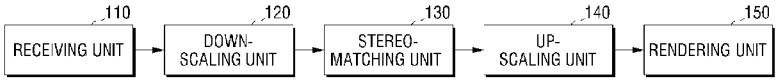
— *with international search report (Art. 21(3))*

— *with amended claims and statement (Art. 19(1))*

Date of publication of the amended claims and statement: 12 July 2012

(54) Title: IMAGE CONVERSION APPARATUS AND DISPLAY APPARATUS AND METHODS USING THE SAME

[Fig. 1]



(57) Abstract: A method for converting an image in an image conversion apparatus is provided. The method includes receiving a stereo image, down-scaling the stereo image, performing stereo-matching by applying adaptive weight to the down-scaled stereo images, generating a depth map according to the stereo-matching, up-scaling the depth map by referring to an input image of original resolution, and generating a plurality of multi-view images by performing depth-image-based rendering with respect to the up-scaled depth map and the input image of original resolution. Accordingly, a plurality of multi-view images may be obtained with ease.

WO 2012/064010 A4

AMENDED CLAIMS
received by the International Bureau on 21 May 2012(21.05.2012)

[Claim 1] (No change) A method for converting an image in an image conversion apparatus, the method comprising:
down-scaling s stereo image;
performing stereo-matching by applying adaptive weights to the down-scaled stereo image;
generating a depth map according to the stereo-matching;
up-scaling the depth map by referring to an input image of original resolution; and
generating a plurality of multi-view images by performing depth-image-based rendering with respect to the up-scaled depth map and the input image of original resolution.

[Claim 2] (No change) The method as claimed in claim 1, wherein the stereo-matching further comprises:
applying a window having a predetermined size to each of a first input image and a second input image of the stereo image, sequentially;
calculating a similarity between a central pixel and a peripheral pixel in each of the windows; and
searching for matching points between the first input image and the second input image by applying the different adaptive weights according to the calculated similarity between the central pixel and the peripheral pixel.

[Claim 3] (No change) The method as claimed in claim 2, wherein the depth map is an image having a different grey level according to distance difference between the matching points.

[Claim 4] (No change) The method as claimed in claim 3, wherein the adaptive weight increases in proportion to similarity of the central pixel,
wherein the grey level is set as a value in inverse proportion to distance difference between the matching points.

[Claim 5] (No change) The method as claimed in claim 2, wherein the up-scaling the depth map comprises:
searching for a similarity between the depth map and the input image of original resolution; and
performing up-scaling with respect to the depth map by applying the adaptive weight with respect to the searched similarity.

[Claim 6] (No change) The method as claimed in claim 1, wherein the plurality of multi-view images are displayed by a non-glasses 3D display system to represent a

3D screen.

[Claim 7] (No change) An image conversion apparatus, comprising:
a down-scaling unit which down-scales a stereo image;
a stereo-matching unit which performs stereo-matching by applying adaptive weight to the down-scaled stereo image and generates a depth map according to the stereo-matching;
an up-scaling unit which up-scales the depth map by referring to an input image of original resolution; and
a rendering unit which generates a plurality of multi-view images by performing depth-image-based rendering with respect to the up-scaled depth map and the input image of original resolution.

[Claim 8] (No change) The apparatus as claimed in claim 7, wherein the stereo-matching unit comprises:
a window generating unit which applies a window having a predetermined size to each of a first input image and a second input image of the stereo image, sequentially;
a similarity-calculating unit which calculates a similarity between a central pixel and a peripheral pixel in the window of each of the first input image and the second input image;
a search unit which searches for matching points between the first input image and the second input image by applying different adaptive weights according to the calculated similarity between the central pixel and the peripheral pixel in the window of each of the first input image and the second input image; and
a depth map generating unit which generates a depth map using a distance between the searched matching points.

[Claim 9] (No change) The apparatus as claimed in claim 8, wherein the depth map is an image having a different grey level according to a distance difference between the matching points.

[Claim 10] (No change) The apparatus as claimed in claim 9, wherein the adaptive weights are set to increase in proportion to a similarity with the central pixel, wherein the grey level is set as a value in inverse proportion to the distance difference between the matching points.

[Claim 11] (No change) The apparatus as claimed in claim 8, wherein the up-scaling unit searches similarity between the depth map and the input image of original resolution and performs up-scaling by applying the adaptive weights with respect to the calculated similarity.

[Claim 12] (No change) The apparatus as claimed in claim 7, further comprising:

an interface unit which provides the plurality of multi-view images to a non-glasses 3D display system.

[Claim 13] (No change) The apparatus as claimed in claim 7, further comprising a receiving unit which receives the stereo image.

[Claim 14] (No change) A display apparatus, comprising:
a receiving unit which receives a stereo image;
an image conversion processing unit which generates a depth map by applying adaptive weights after down-scaling the stereo image and generates a multi-view image through up-scaling using the generated depth map and a resolution image; and
a display unit which outputs the multi-view image generated by the image conversion processing unit.

[Claim 15] (No change) The display apparatus as claimed in claim 14, wherein the image conversion processing unit comprises:
a down-scaling unit which down-scales the stereo image;
a stereo-matching unit which performs stereo-matching by applying adaptive weight with respect to the down-scaled stereo images and generates a depth map according to the stereo-matching;
an up-scaling unit which up-scales the depth map by referring to an input image of original resolution; and
a rendering unit which generates a plurality of multi-view images by performing depth-image-based rendering with respect to the up-scaled depth map and the input image of original resolution.

[Claim 16] (Canceled)

[Claim 17] (Canceled)

STATEMENT UNDER ARTICLE 19 (1)

Claims 16 and 17 have been cancelled. This amendment has been made to reduce the scope of patent rights of the Invention.