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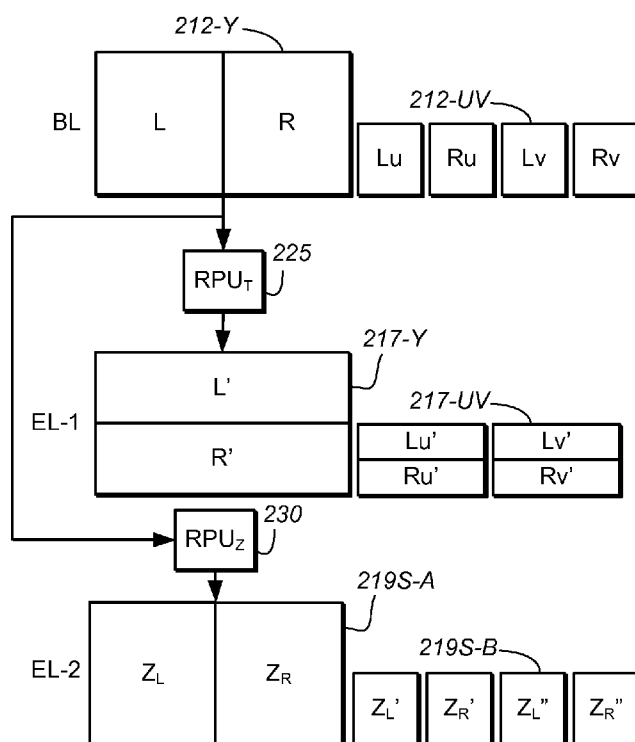
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[Continued on next page]

(54) Title: FRAME COMPATIBLE DEPTH MAP DELIVERY FORMATS FOR STEREOSCOPIC AND AUTO-STEREOSCOPIC DISPLAYS

**FIG. 2A**

(57) Abstract: Stereoscopic video data and corresponding depth map data for stereoscopic and auto-stereoscopic displays are coded using a coded base layer and one or more coded enhancement layers. Given a 3D input picture and corresponding input depth map data, a side-by-side and a top-and-bottom picture are generated based on the input picture. Using an encoder, the side-by-side picture is coded to generate a coded base layer. Using the encoder and a texture reference processing unit (RPU), the top-and-bottom picture is encoded to generate a first enhancement layer, wherein the first enhancement layer is coded based on the base layer stream, and using the encoder and a depth-map RPU, depth data for the side-by-side picture are encoded to generate a second enhancement layer, wherein the second enhancement layer is coded based on the base layer. Alternative single, dual, and multi-layer depth map delivery systems are also presented.



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SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

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- with international search report (Art. 21(3))
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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2013/045447

A. CLASSIFICATION OF SUBJECT MATTER
INV. H04N13/00 H04N7/32
ADD.

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)
H04N

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.
Y	WO 2012/012584 A1 (DOLBY LAB LICENSING CORP [US]; LEONTARIS ATHANASIOS [US]; TOURAPIS ALE) 26 January 2012 (2012-01-26) abstract paragraphs [0041], [0047]; figure 11 paragraph [0057] ----- -/--	1-5,17, 18, 23-26, 41,42



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

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Name and mailing address of the ISA/

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Daribo, Ismael

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2013/045447

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	HEWAGE C T E R ET AL: "Quality Evaluation of Color Plus Depth Map-Based Stereoscopic Video", IEEE JOURNAL OF SELECTED TOPICS IN SIGNAL PROCESSING, IEEE, US, vol. 3, no. 2, 1 April 2009 (2009-04-01), pages 304-318, XP011253318, ISSN: 1932-4553	11
Y	figure 2	1-5,17, 18, 23-26, 41,42
A	----- ANTHONY VETRO ET AL: "3D-TV Content Storage and Transmission", IEEE TRANSACTIONS ON BROADCASTING, IEEE SERVICE CENTER, PISCATAWAY, NJ, US, vol. 57, no. 2, 1 June 2011 (2011-06-01), pages 384-394, XP011323527, ISSN: 0018-9316, DOI: 10.1109/TBC.2010.2102950 section II.C; page 2; figure 2	1-5,17, 18,41,42
X	----- WO 2012/014171 A1 (SISVEL TECHNOLOGY SRL [IT]; AMATO PAOLO D [IT]; PENNISI DARIO [IT]; BA) 2 February 2012 (2012-02-02)	19-22
A	figure 5 -----	34-40

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2013/045447

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☒ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
1-5, 11, 17-26, 34-42
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-5, 11, 17, 18, 23-26, 41, 42

All searched inventions

1.1. claims: 1-5, 17, 18, 23-26, 41, 42

Backward-Compatible 2-layer Frame-Compatible-Full-Resolution
3D video and 3-layer depth map delivery format

1.2. claim: 11

Non-Backward-Compatible 1-layer
Frame-Compatible-Full-Resolution first view video and
1-layer Full-Resolution depth map delivery format

2. claims: 6, 7

Backward-Compatible 2-layer Frame-Compatible-Full-Resolution
3D video and 1-layer depth map delivery format

3. claims: 8, 9

Backward-Compatible 3-layer Frame-Compatible-Full-Resolution
3D video and 2-layer depth map delivery map

4. claim: 10

Non-Backward-Compatible 1-layer Frame-Compatible 3D video
and 1-layer depth map delivery format

5. claims: 12, 13

Non-Backward-Compatible 3-layer
Frame-Compatible-Full-Resolution 3D video and 1-layer depth
map delivery format

6. claims: 14-16, 27-33

Non-Backward-Compatible 2-layer
Frame-Compatible-Full-Resolution luminance component video
and 2-layer depth map delivery format

7. claims: 19-22, 34-40

Backward-Compatible 1-layer Frame-Compatible 3D video and
1-layer depth map delivery format

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2012012584 A1	26-01-2012	CN 103026706 A	03-04-2013
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		EP 2599319 A1	05-06-2013
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