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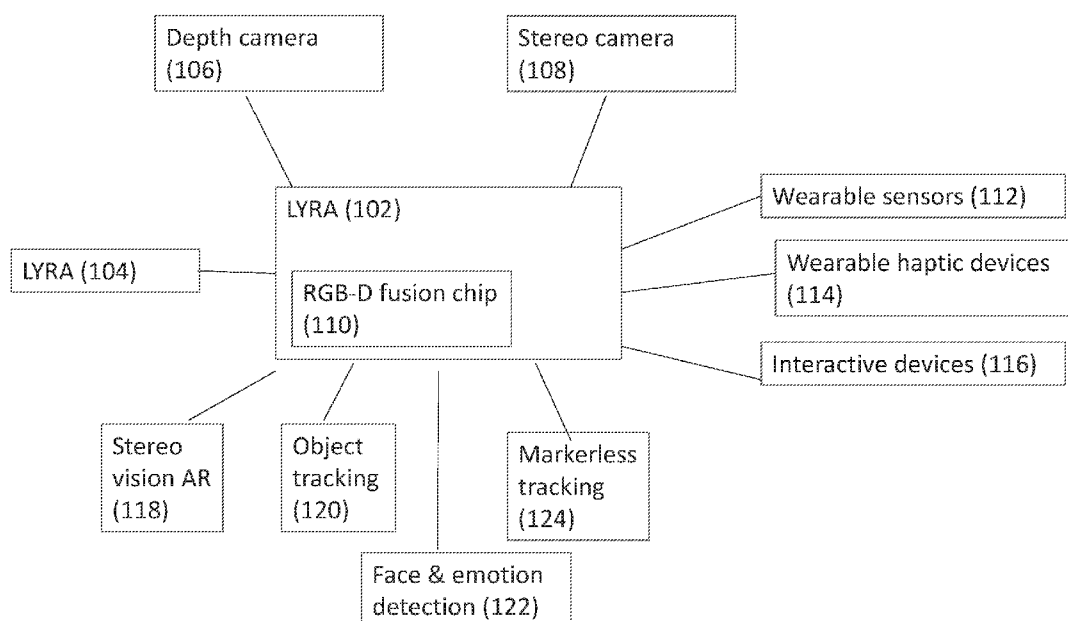
Sylvain; Chemin De Roseneck 5, 1006 Lausanne (CH). ROTH, Flavio; Chemin De Roseneck 5, 1006 Lausanne (CH). OSTLUND, Jonas; Chemin De Roseneck 5, 1006 Lausanne (CH). OTT, Renaud; Chemin De Roseneck 5, 1006 Lausanne (CH). CONDOLO, Frédéric; Chemin De Roseneck 5, 1006 Lausanne (CH). BOURDAUD, Nicolas; Chemin De Roseneck 5, 1006 Lausanne (CH). LEVI CAPITAO CANTANTE, Flavio; Chemin De Roseneck 5, 1006 Lausanne (CH). BARBIER, Corentin; Chemin De Roseneck 5, 1006 Lausanne (CH). GOMEZ LORENZO, Ieltxu; Chemin De Roseneck 5, 1006 Lausanne (CH).

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(54) Title: SYSTEMS, METHODS AND APPARATUSES FOR STEREO VISION AND TRACKING

Figure 1



(57) Abstract: A system, method and apparatus for stereo vision and tracking with a plurality of coupled cameras and optional sensors.





GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, 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, KM, ML, MR, NE, SN, TD, TG).

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

International application No
PCT/IB2018/000386

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06K9/00 G06F3/01 H04N13/239 H04N13/271 H04N13/296
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)
G06K G06F 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.
X	US 2016/323565 A1 (VAN BAARSEN JOHN PETER [CA] ET AL) 3 November 2016 (2016-11-03)	1,12,13,43,44
Y	paragraph [0011] paragraph [0013] - paragraph [0014] paragraph [0026] - paragraph [0027] paragraph [0098] - paragraph [0099] paragraph [0107]	2-5
Y	----- EP 2 453 658 A1 (SONY CORP [JP]) 16 May 2012 (2012-05-16) paragraph [0021] - paragraph [0025] paragraph [0042] paragraph [0051] - paragraph [0052] paragraph [0132] paragraph [0142] paragraph [0171] ----- -/-	2-5



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)

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"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

18 July 2018

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Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2018/000386

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2015/192950 A1 (TUBBS MATTHEW RAY [US] ET AL) 9 July 2015 (2015-07-09) paragraph [0003] paragraph [0023] - paragraph [0025] paragraph [0041] -----	3-5
A	Dr Jan ET AL: "Fusion of Terrestrial LiDAR Point Clouds with Color Imagery", 16 March 2013 (2013-03-16), XP055284936, Retrieved from the Internet: URL: http://www.cis.rit.edu/DocumentLibrary /admin/uploads/CIS000202.PDF cited in the application entire document -----	13

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2018/000386

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2016323565	A1	03-11-2016	NONE

EP 2453658	A1	16-05-2012	CN 102138329 A 27-07-2011
			EP 2453658 A1 16-05-2012
			JP 5589585 B2 17-09-2014
			JP 2011035894 A 17-02-2011
			KR 20120039499 A 25-04-2012
			US 2012274798 A1 01-11-2012
			WO 2011004832 A1 13-01-2011

US 2015192950	A1	09-07-2015	TW 201531940 A 16-08-2015
			US 2015192950 A1 09-07-2015
			WO 2015105659 A1 16-07-2015

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2018/000386

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.:
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.:

1-5, 12, 13, 43, 44

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, 12, 13, 43, 44
imaging system with improved color image

2. claims: 6, 9-11, 17-32, 48-62
user tracking system

3. claims: 7, 8
system with improved operability

4. claims: 14, 15, 45-47
imaging system with reduced image noise

5. claims: 16, 42
imaging system with bad pixel removal

6. claims: 33-37
imaging system calibration

7. claim: 38
imaging system with reduced motion blur

8. claims: 39-41
imaging system with improved data flow synchronization

9. claims: 63-69
system for amputee users
