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10170773.5 26 July 2010 (26.07.2010) EP
- (71) **Applicant (for all designated States except US):** KONINKLIJKE PHILIPS ELECTRONICS N.V. [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).
- (72) **Inventor; and**
- (75) **Inventor/Applicant (for US only):** PETERS, Marc, Andre [NL/NL]; c/o High Tech Campus Building 44, NL-5656 AE Eindhoven (NL).
- (74) **Agents:** COOPS, Peter et al.; High Tech Campus, Building 44, NL-5656 AE Eindhoven (NL).
- (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, KR, 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, 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.

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**Declarations under Rule 4.17:**

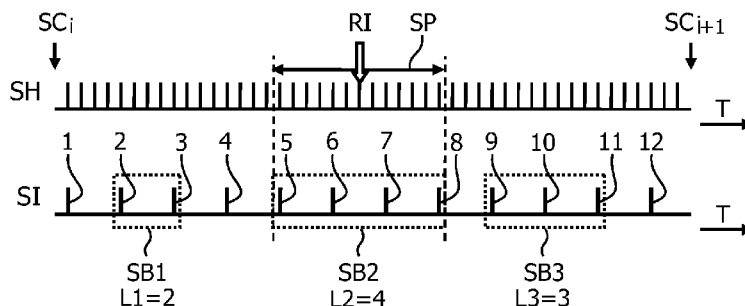
— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))

**Published:**

- with international search report (Art. 21(3))
- 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:**  
18 May 2012

(54) **Title:** DETERMINING REPRESENTATIVE IMAGES FOR A VIDEO



**FIG. 2**

(57) **Abstract:** A video comprises at least one shot (SH), which is a continuous sequence of images representing a scene viewed from a particular location. Images are selected from a shot (SH) so as to obtain a continuous sequence of selected images (SI) that are evenly distributed throughout the shot. At least one continuous subsequence (SB1, SB2, SB3) of selected images that meet a predefined similarity test is identified. An image is selected from a continuous portion (SP) of the shot that coincides in time with the longest continuous subsequence (SB2) of selected images that meet the predefined similarity test. The image that is selected constitutes a representative image (RI) for the shot.

WO 2012/014129 A3

# INTERNATIONAL SEARCH REPORT

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<b>A. CLASSIFICATION OF SUBJECT MATTER</b> INV. G11B27/28 ADD.				
According to International Patent Classification (IPC) or to both national classification and IPC				
<b>B. FIELDS SEARCHED</b>				
Minimum documentation searched (classification system followed by classification symbols) G11B				
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 practical, search terms used) EPO-Internal, WPI Data				
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>				
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X	US 5 635 982 A (ZHANG HONG J [SG] ET AL) 3 June 1997 (1997-06-03) column 2, line 50 - column 7, line 39; claims 1-29; figures 1-5 -----	1-11, 13-15		
X	EMRULLAH DURUCAN ED - DURUCAN EMRULLAH: "Low Computational Cost Illumination Invariant Change Detection for Video Surveillance By Linear Independence", 1 January 2002 (2002-01-01), THESE PRESENTEE AU DEPARTMENT D'ELECTRICITE ECOLE POLYTECHNIQUE FEDERALE DE LAUSANNE POUR L'OBTENTION DU GRADE DE DOCTEUR ES SCIENCES TECHNIQUES, LAUSANNE, EPFL, PAGE(S) 1 - 138, XP002473714, -----	1-6,13, 15		
Y	page 7 - page 25 page 43 - page 78 page 81 - page 96 ----- -/--	7-11,14		
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <span style="margin-left: 100px;"><input checked="" type="checkbox"/> See patent family annex.</span>				
* Special categories of cited documents : <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none; vertical-align: top;">                             "A" document defining the general state of the art which is not considered to be of particular relevance                              "E" earlier document 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                         </td> <td style="width: 50%; border: none; vertical-align: top;">                             "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.                              "&amp;" document member of the same patent family                         </td> </tr> </table>			"A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document 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
"A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document 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	Date of mailing of the international search report			
15 December 2011	12/03/2012			
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer  Durucan, Emrullah			

**INTERNATIONAL SEARCH REPORT**

International application No PCT/IB2011/053252
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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.
X	US 2009/128633 A1 (CHAPMAN PETER [GB]) 21 May 2009 (2009-05-21)	1-6, 13, 15
Y	the whole document -----	7-11, 14
X	US 2003/219232 A1 (LIN SHU [US]) 27 November 2003 (2003-11-27)	1-6, 13, 15
Y	the whole document -----	7-11, 14
X	US 6 119 123 A (ELENBAAS JAN HERMANUS [US] ET AL) 12 September 2000 (2000-09-12)	1-6, 13, 15
Y	the whole document -----	7-11, 14

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/IB2011/053252
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5635982	A	03-06-1997	EP 0690413 A2 03-01-1996
			JP 8237549 A 13-09-1996
			US 5635982 A 03-06-1997
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			US 6119123 A 12-09-2000
			WO 9928835 A2 10-06-1999
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**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

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

1. claims: 1-11, 13-15

Detection of Representative Images

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2. claim: 12

Search of Videos in a Video Database

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# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/IB2011/053252

## 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.:

1-11, 13-15

### 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.