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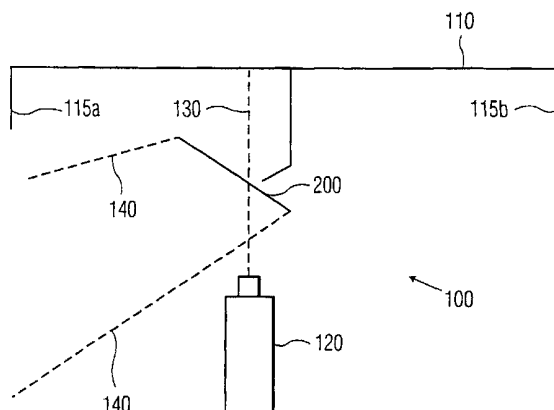
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- (51) International Patent Classification⁷: H04N 5/225 (74) Agent: SCHOENMAKER, Maarten; Internationaal Octrooibureau B.V., Prof Holstlaan 6, NL-5656 AA Eindhoven (NL).
- (21) International Application Number: PCT/EP01/09448
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- (71) Applicant: KONINKLIJKE PHILIPS ELECTRONICS N.V. [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL). (88) Date of publication of the international search report: 11 July 2002
- (72) Inventors: WEINSHALL, Daphna; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). LYONS, Damian, M.; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHOD AND APPARATUS FOR TRACKING AN OBJECT OF INTEREST IN A DIGITAL IMAGE



(57) Abstract: A method and apparatus are disclosed for tracking an object of interest in a digital image having at least one high resolution portion. In a "shaped mirror embodiment," a shaped rotating mirror magnifies at least one portion of the field of view so that a stationary camera obtains a higher resolution image corresponding to the magnified region. In a "two camera embodiment," two stationary cameras with varying resolution are focused on a flat rotating mirror. A first stationary camera having lower resolution produces the overall panoramic image, while the second stationary camera having higher resolution produces the higher resolution image with a smaller field of view. In the shaped mirror embodiment, a rotating mirror contains one magnifying region that magnifies a portion of the field of view, and additional regions that reduce the remaining portions of the field of view. In the illustrative two-camera embodiment, the rotating mirror is curved to produce regions of variable magnifying resolution. In the illustrative two-camera embodiment, a 360-degree panoramic image is obtained using a first stationary camera and a flat rotating mirror. A second camera having a higher resolution or higher zoom than the first camera is also utilized. A semi-reflective mirror transmits a predefined percentage of the reflected light to the first camera and reflects a predefined percentage of the reflected light to the second camera.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 01/09448

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H04N5/225

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)

IPC 7 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 practical, search terms used)

EPO-Internal, PAJ, 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	GB 2 247 592 A (HUNTING ENG LTD) 4 March 1992 (1992-03-04)	1-4,6, 14-17, 19,20,27 5,18
A	page 2, line 11 -page 3, line 35 page 6, line 24 -page 8, line 30 page 9, line 29 -page 10, line 15 figures 2A,2B	
A	--- PATENT ABSTRACTS OF JAPAN vol. 1999, no. 04, 30 April 1999 (1999-04-30) & JP 11 004373 A (NIPPON TELEGR &TELEPH CORP <NTT>), 6 January 1999 (1999-01-06) cited in the application abstract --- -/-	1-6, 14-20,27

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in 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 document but published on or after the international filing date

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"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

19 February 2002

Date of mailing of the international search report

26. 04. 2002

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 01/09448

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 854 713 A (ICHIKAWA AKIRA ET AL) 29 December 1998 (1998-12-29) column 22, line 44 -column 23, line 6 figures 21,22 -----	1-6, 14-20,27

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP 01/09448

Box I Observations where certain claims were found unsearchable (Continuation of item 1 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 II Observations where unity of invention is lacking (Continuation of item 2 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 fee, this Authority did not invite payment of any additional fee.
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.:

1-6, 14-20, 27

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ 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: 1-6,14-20,27

Digital image system with a mirror rotated by non-controllable motor

2. Claims: 7-13,21-26,28

Digital image system with 2 cameras

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 01/09448

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
GB 2247592	A	04-03-1992	DE 69124097 D1 DE 69124097 T2 EP 0544770 A1 WO 9203806 A1	20-02-1997 14-08-1997 09-06-1993 05-03-1992
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