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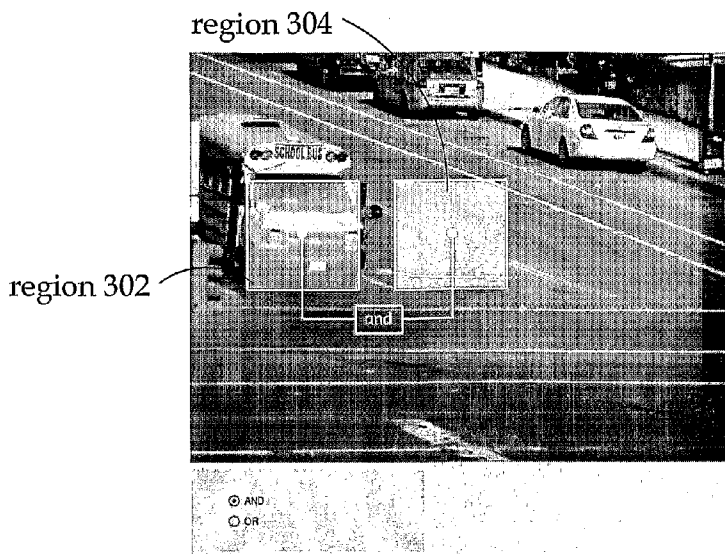
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60/716,729 12 September 2005 (12.09.2005) US
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[Continued on next page]

(54) Title: SPECIFYING SEARCH CRITERIA FOR SEARCHING VIDEO DATA



(57) Abstract: A method and apparatus is described for specifying regions of interest within a two-dimensional view of visual information that comprises a series of frames. Visual changes that occur in the view are stored. A user enters search criteria that specify at least one first region of interest within the view and a visual change. A visual change may include a change in pixel values or a detection of motion of one or more objects within the view. The first search criteria are compared against the stored visual changes to identify a sequence of frames in which the specified visual change occurred within the first region of interest. The search criteria may specify multiple regions of interest, each with one or more types of visual changes. If a motion is specified, then a direction, speed, and behavior of a moving object may also be specified.

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*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.*

INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2006/035959

**A. CLASSIFICATION OF SUBJECT MATTER**  
INV. G06F17/30

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)  
G06F

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, INSPEC

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GHANEM N M ET AL: "Mining tool for surveillance video" PROCEEDINGS OF THE SPIE - THE INTERNATIONAL SOCIETY FOR OPTICAL ENGINEERING, USA, vol. 5307, no. 1, 2003, pages 259-270, XP002431666 ISSN: 0277-786X abstract; figures 6,7 page 259, lines 1-25 page 262, paragraph 3 pages 265-268, paragraph 5 ----- -/--	1-17, 20-37,40

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 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  
**30 April 2007**

Date of mailing of the international search report  
**12/07/2007**

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## INTERNATIONAL SEARCH REPORT

International application No

PCT/US2006/035959

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>HAMPAPUR A ET AL: "Smart surveillance: applications, technologies and implications"            PROCEEDINGS OF THE 2003 JOINT CONFERENCE OF THE FOURTH INTERNATIONAL CONFERENCE ON INFORMATION, COMMUNICATIONS &amp; SIGNAL PROCESSING AND FOURTH PACIFIC-RIM CONFERENCE ON MULTIMEDIA, SINGAPORE 15-18 DEC. 2003, IEEE, vol. 2, 15 December 2003 (2003-12-15), pages 1133-1138, XP010702808            ISBN: 0-7803-8185-8            abstract; figures 1,4,8            page 1133, paragraph 2 - page 1134, paragraph 3.1</p> <p style="text-align: center;">-----</p>	1-17, 20-37,40
X	<p>JAMES BLACK ET AL: "Hierarchical database for a multi-camera surveillance system"            PATTERN ANALYSIS AND APPLICATIONS, SPRINGER-VERLAG, vol. 7, no. 4, 1 December 2004 (2004-12-01), pages 430-446, XP019381474            ISSN: 1433-755X            abstract; figures 17,20,21; tables 8,9            page 430, paragraph 1            page 439, paragraph 5.2.3 - page 442, right-hand column, paragraph 5.3</p> <p style="text-align: center;">-----</p>	1-17, 20-37,40
X	<p>PERROTT A ET AL: "Real-time multimedia tagging and content-based retrieval for CCTV surveillance systems"            PROCEEDINGS OF THE SPIE - THE INTERNATIONAL SOCIETY FOR OPTICAL ENGINEERING, USA, vol. 4862, 2002, pages 40-49, XP002430879            ISSN: 0277-786X            abstract; figure 3            page 43, paragraph 2.3            page 45, paragraph 4 - page 48, paragraph 5</p> <p style="text-align: center;">-----</p>	1-12, 20-32,40
X	<p>US 5 802 361 A (WANG KATHERINE [US] ET AL)            1 September 1998 (1998-09-01)            abstract; figures 2a,3,5a,5c,5i,7,9            column 4, line 42 - column 6, line 4            column 9, line 55 - column 10, line 65            column 14, lines 34-61            column 15, lines 42-52            column 16, lines 47-54            column 17, lines 9-55</p> <p style="text-align: center;">-----</p>	1-17, 20-37,40

INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2006/035959

**Box 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 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 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.:

1-17, 20-37, 40

**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: 1-17, 20-37, 40

The first group of claims describes a method and a computer-readable medium carrying one or more sequences of instructions to perform the method, comprising the following steps:

storing change information about visual changes that occur in a two-dimensional view of visual information;  
receiving, from a user, first search criteria that specifies:

a first region of interest within the view, and a visual change; and

comparing the first search criteria against said change information to identify a sequence of frames, within the visual information, in which said visual change occurred within said first region of interest.

The dependent claims present in this group seem to describe different embodiments, each characterised by various arbitrary search criteria, so that they represent different user requirements.

The problem to be solved by the subject matter of these claims seems to be how to provide a suitable user interface for a video retrieval system, enabling specification of different search criteria, according to user requirements.

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2. claims: 18, 19, 38, 39

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

The second group of claims describes a method and a computer-readable medium carrying one or more sequences of instructions to perform the method, comprising the following steps:

storing change information about visual changes that occur in a two-dimensional view of visual information;  
receiving, from a user, first search criteria that specifies:

a first region of interest within the view, and a visual change; and

comparing the first search criteria against said change information to identify a sequence of frames, within the visual information, in which said visual change occurred within said first region of interest, wherein

comparing said first search criteria includes:

identifying a first set of video data change records based on a second region within the view (or first time interval, respectively), wherein:

a video data change record corresponds to a plurality of frames of the visual information and includes change data that indicates visual changes that were detected relative to the corresponding plurality of frames, and

the second region includes said first region of interest and is larger than said first region of interest; and

based on the first set of video data change records and said first region, identifying a second set of video data change records, wherein the change data of each video data change record in the second set satisfies the first search criteria.

The dependent claims present in this group seem to describe two different spatial and temporal embodiments, respectively.

The problem to be solved by the subject matter of these claims seems to be how to provide a an efficient retrieval algorithm in a video retrieval system.

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# 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
US 5802361	A	NONE	