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- (74) Agent: **GROENENDAAL, Antonius, W., M.**; Internationaal Octrooibureau B.V., Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).
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(54) Title: CONTEXT AND CONTENT BASED INFORMATION PROCESSING FOR MULTIMEDIA SEGMENTATION AND INDEXING

(57) Abstract: Method and system are disclosed for information processing, for example, for multimedia segmentation, indexing and retrieval. The method and system includes multimedia, for example audio/visual/text (A/V/T), integration using a probabilistic framework. Both, multimedia content and context information are represented and processed via the probabilistic framework. This framework is represented, for example, by a Bayesian network and hierarchical priors, which is graphically described by stages, each having a set of layers with each layer including a number of nodes representing content or context information. At least the first layer of the first stage is processes multimedia content information such as objects in the A/V/T domains, or combinations of thereof. The other layers of the various stages describe multimedia context information, as further described below. Each layer is a Bayesian network, wherein nodes of each layer explain certain characteristics of the next "lower" layer and/or "lower" stages. Together, the nodes and connections there between form an augmented Bayesian network. Multimedia context is the circumstance, situation, underlying structure of the multimedia information (audio, visual, text) being processed. The multimedia information (both content and context) is combined at different levels of granularity and level of abstraction within the layers and stages.



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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER IPC 7 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) IPC 7 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, WPI Data, PAJ, INSPEC				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X	VASCONCELOS N ET AL: "A Bayesian framework for semantic content characterization" COMPUTER VISION AND PATTERN RECOGNITION, 1998. PROCEEDINGS. 1998 IEEE COMPUTER SOCIETY CONFERENCE ON SANTA BARBARA, CA, USA 23-25 JUNE 1998, LOS ALAMITOS, CA, USA, IEEE COMPUT. SOC, US, 23 June 1998 (1998-06-23), pages 566-571, XP010291693 ISBN: 0-8186-8497-6 the whole document	1,4-6, 11-17, 22-24		
Y	--- -/---	2,3, 7-10, 18-21		
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><input checked="" type="checkbox"/> Further documents are listed in the continuation of box C.</td> <td style="width: 50%; border: none;"><input checked="" type="checkbox"/> Patent family members are listed in annex.</td> </tr> </table>			<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C.	<input checked="" type="checkbox"/> Patent family members are listed in annex.
<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C.	<input checked="" type="checkbox"/> Patent family members are listed in annex.			
° Special categories of cited documents :				
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"> *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;"> *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 </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 <p style="text-align: center; font-weight: bold;">3 November 2003</p>		Date of mailing of the international search report <p style="text-align: center; font-weight: bold;">10/11/2003</p>		
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016		Authorized officer <p style="text-align: center; font-weight: bold;">Ruiz Sanchez, J</p>		

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International Application No

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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	<p>GAUCH J M ET AL: "Real time video scene detection and classification" INFORMATION PROCESSING & MANAGEMENT, ELSEVIER, BARKING, GB, vol. 35, no. 3, May 1999 (1999-05), pages 381-400, XP004169416 ISSN: 0306-4573 abstract page 383, line 26 -page 384, line 35 page 387, line 1-9; figures 1,3 section 5; figure 6</p>	<p>1-3, 6-10,13, 23,24</p>
Y	<p>MUFIT FERMAN A ET AL: "Probabilistic analysis and extraction of video content" IMAGE PROCESSING, 1999. ICIP 99. PROCEEDINGS. 1999 INTERNATIONAL CONFERENCE ON KOBE, JAPAN 24-28 OCT. 1999, PISCATAWAY, NJ, USA, IEEE, US, 24 October 1999 (1999-10-24), pages 91-95, XP010368957 ISBN: 0-7803-5467-2 sections 1,4,6</p>	<p>2,3, 7-10, 18-21</p>
E	<p>EP 1 170 679 A (MITSUBISHI ELECTRIC CORP) 9 January 2002 (2002-01-09) paragraph '0002! paragraphs '0015!-'0017! paragraphs '0020!-'0022! paragraphs '0037!-'0042! figures 1,2</p>	<p>1,5-24</p>

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Information on patent family members

International Application No
PCT/LI 01/08349

Patent document cited in search report	Publication date	Patent family member(s)	Publication date	
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			EP 1170679 A2	09-01-2002
			JP 2002077906 A	15-03-2002
			US 2002018594 A1	14-02-2002
