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[Continued on next page]

(54) Title: VOICE-BASED IMAGE TAGGING AND SEARCHING

(57) Abstract: The electronic device with one or more processors and memory provides a digital photograph of a real-world scene. The electronic device provides a natural language text string corresponding to a speech input associated with the digital photograph. The electronic device performs natural language processing on the text string to identify one or more terms associated with an entity, an activity, or a location. The electronic device tags the digital photograph with the one or more terms and their associated entity, activity, or location.

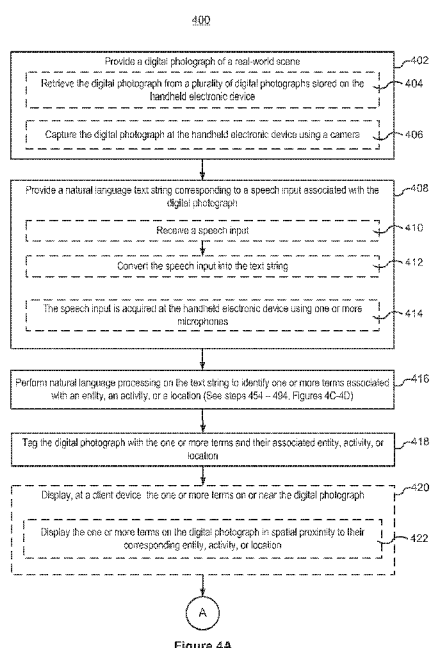


Figure 4A



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- *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:**
21 August 2014

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2013/047659

A. CLASSIFICATION OF SUBJECT MATTER
 INV. G06F17/30
 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)
 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 practicable, search terms used)

EPO-Internal, COMPENDEX, INSPEC, 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 2009/150147 A1 (JACOBY KEITH A [US] ET AL) 11 June 2009 (2009-06-11)	1-4, 8-17, 23-25, 50-53, 62-65, 69-77, 83-85
Y	abstract; figures 1-6 paragraphs [0001] - [0003] paragraphs [0011] - [0015] paragraphs [0028] - [0038] -----	5-7, 66-68
Y	US 2006/229870 A1 (KOBAL JEFFREY S [US]) 12 October 2006 (2006-10-12) the whole document ----- -/-	5-7, 66-68



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)

"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

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Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

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	US 6 462 778 B1 (ABRAM PHILIP MICHAEL [US] ET AL) 8 October 2002 (2002-10-08)	1-17, 23-25, 50-53, 62-77, 83-85
Y	abstract; figures 1,2,7,8 column 1, line 59 - column 2, line 5 column 2, line 66 - column 3, line 38 column 4, line 59 - column 6, line 12	19-22, 28,29, 35-37, 79-82, 88,89, 95-97

X	US 2011/212717 A1 (RHOADS GEOFFREY B [US] ET AL) 1 September 2011 (2011-09-01)	26,27, 30-34, 38-40, 54-57, 86,87, 90-94, 98-100
Y	abstract; figures 0, 15, 21-23, 50 paragraphs [0015] - [0017] paragraphs [0167], [0170] - [0171] paragraphs [0470] - [0528] paragraphs [0541] - [0542] paragraphs [0681], [0705] - [0709] paragraphs [1130], [1133]	19-22, 28,29, 35-37, 79-82, 88,89, 95-97

X	US 2004/174434 A1 (WALKER JAY S [US] ET AL) 9 September 2004 (2004-09-09)	1-17, 19-40, 50-57, 62-77, 79-100
	abstract; figures 5,6,8,9,12A,13A, 14, 16-18 paragraphs [0023] - [0024] paragraphs [0090], [0102] - [0103] paragraphs [0117] - [0207] paragraphs [0286] - [0300] paragraphs [0311] - [0316] paragraphs [0350] - [0354] paragraphs [0455], [0459] paragraphs [0488] - [0495] paragraphs [0507] - [0511] paragraphs [0514] - [0521] ----- -/--	

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2013/047659

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	SARVAS R ET AL: "Metadata Creation System for Mobile Images", CONFERENCE PROCEEDINGS / MOBISYS 2004, THE SECOND INTERNATIONAL CONFERENCE ON MOBILE SYSTEMS, APPLICATIONS AND SERVICES ; BOSTON, MASSACHUSETTS, USA, JUNE 6 - 9, 2004; [INTERNATIONAL CONFERENCE ON MOBILE SYSTEMS, APPLICATIONS AND SERVICES], ASSOCIATI, vol. CONF. 2, 6 June 2004 (2004-06-06), pages 36-48, XP002393963, DOI: 10.1145/990064.990072 ISBN: 978-1-58113-793-4	26,27, 30-34, 38-40, 54-57, 86,87, 90-94, 98-100
Y	abstract; figures 1-3 page 37, paragraph 1.1 - page 38, paragraph 2.2 page 39, paragraph 2.3 - page 40, paragraph 2.4 page 42, paragraph 3.1 page 44, paragraph 3.4.5 page 48 Appendix 1	19-22, 26-40, 54-57, 79-82, 86-100
X	----- TIMOTHY J HAZEN ET AL: "Speech-Based Annotation and Retrieval of Digital Photographs", INTERSPEECH. 8TH ANNUAL CONFERENCE OF THE INTERNATIONAL SPEECH COMMUNICATION ASSOCIATION, AUGUST 27-31, 2007, ANTWERP, BELGIUM,, 27 August 2007 (2007-08-27), pages 2165-2168, XP007916949, ISBN: 978-1-60560-316-2	1-4, 8-17, 23-25, 41-53, 58-65, 69-77, 83-85, 101-104
Y	abstract; figures 1,2 page 2165, paragraph 1 page 2165, paragraph 3.1 - page 2167, paragraph 4.2 page 2168, paragraph 5	5-7, 19-22, 26-40, 54-57, 66-68, 79-82, 86-100
X	----- JIAYI CHEN ET AL: "AN IMPROVED METHOD FOR IMAGE RETRIEVAL USING SPEECH ANNOTATION", MMM'03, THE 9TH INTERNATIONAL CONFERENCE ON MULTI-MEDIA MODELING JANUARY 7-10, 2003, TAIWAN, 7 January 2003 (2003-01-07), pages 1-17, XP055124982, ISBN: 9579078572 abstract; figures 1, 3, 5 page 1, paragraph 1 - page 5, paragraph 2.2 page 8, paragraph 4 - page 10, paragraph 4.1 page 12, paragraph 5 - page 16, paragraph 7 -----	1-4, 8-17, 23-25, 41-53, 58-65, 69-77, 83-85, 101-104
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INTERNATIONAL SEARCH REPORT

International application No

PCT/US2013/047659

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>SRIHARI R K: "USE OF MULTIMEDIA INPUT IN AUTOMATED IMAGE ANNOTATION AND CONTENT-BASED RETRIEVAL", PROCEEDINGS OF SPIE, S P I E - INTERNATIONAL SOCIETY FOR OPTICAL ENGINEERING, US, vol. 2420, 9 February 1995 (1995-02-09), pages 249-260, XP000571788, ISSN: 0277-786X, DOI: 10.1117/12.205290 abstract; figures 1,5 pages 249-252, paragraph 1 page 257, paragraph 3 - page 260, paragraph 5</p> <p>-----</p>	<p>1-4, 8-17, 23-25, 41-53, 58-65, 69-77, 83-85, 101-104</p>
Y	<p>US 5 493 677 A (BALOGH ARISTOTLE [US] ET AL) 20 February 1996 (1996-02-20) abstract; figures 1-4, 9, 10 column 1, line 57 - column 2, line 16 column 3, line 1 - column 7, line 25 column 9, line 62 - column 14, line 43 column 15, line 66 - column 16, line 18</p> <p>-----</p>	<p>5-7, 66-68</p>
A	<p>US 2011/249144 A1 (CHANG E-CHENG [US]) 13 October 2011 (2011-10-13)</p> <p>the whole document</p> <p>-----</p>	<p>1-17, 19-77, 79-104</p>

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2013/047659

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.: 18, 78
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:
see FURTHER INFORMATION sheet PCT/ISA/210
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.:

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

Continuation of Box II.2

Claims Nos.: 18, 78

The present application does not meet the criteria of Article 5 PCT, because the subject-matter of claims 18 and 78 refers to subject-matter "(...) performing the natural language processing on the text string further comprises accessing information obtained from one or more sensors of the handheld electronic device for determining a meaning of one or more of the terms [said terms identified during natural language processing] (...)"

which is not disclosed in the application documents in a manner sufficiently clear and complete for the invention to be carried out by a person skilled in the art.

In particular, it is not at all disclosed how the "information obtained from one or more sensors of the handheld electronic device" is used to determine a meaning of one or more of the terms (said terms identified during a respective natural language processing step of respective parent claim 1 or 62).

The present description and drawings merely recite the same wording of claims 18 and 78 and do not provide any examples, embodiments or explanations enabling the skilled person to carry out the invention.

For essentially the same reasons, the aforementioned claims are regarded as unclear and not fully supported by the description, contrary to the requirements of Article 6 PCT.

This lack of disclosure, clarity and support is to that extent that no meaningful search of the aforementioned claims could be carried out at all (Article 17(2) PCT), and no opinion is established with regards to said claims.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guidelines C-IV, 7.2), should the problems which led to the Article 17(2) declaration be overcome.

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, 23-25, 50-53, 62-77, 83-85

A method, a computer system, a non-transitory computer readable storage medium, electronic devices, and an information processing apparatus, comprising:
 at an electronic device with a processor and memory storing instructions for execution by the processor:
 providing a digital photograph of a real-world scene;
 providing a natural language text string corresponding to a speech input associated with the digital photograph;
 performing natural language processing on the text string to identify one or more terms associated with an entity, an activity, or a location; and
 tagging the digital photograph with the one or more terms and their associated entity, activity, or location.
 The problem to be solved by this subject-matter appears to be how to provide a method and apparatus for tagging photos in an interactive and user friendly manner.

2. claims: 19-22, 26-40, 54-57, 79-82, 86-100

Methods, a computer system, a non-transitory computer readable storage medium, electronic devices, and an information processing apparatus, comprising:
 at an electronic device with a processor and memory storing instructions for execution by the processor:
 obtaining a digital photograph of a real-world scene;
 generating a fingerprint of the digital photograph;
 identifying one or more reference fingerprints that correspond to the fingerprint;
 retrieving one or more tags associated with the reference fingerprints, wherein at least one of the tags includes a term and an associated entity, activity, or location; and
 associating the one or more tags with the digital photograph.
 The problem to be solved by this subject-matter appears to be how to provide a method and apparatus for tagging photos in a full- or semi-automatic manner, leveraging the properties/contents of the photos, and thus to reduce interaction with the user.

3. claims: 41-49, 58-61, 101-104

A method, portable electronic devices, computer systems, non-transitory computer readable storage media, and information processing apparatuses, comprising:
 at an electronic device with a processor and memory storing instructions for execution by the processor:
 providing a natural language text string corresponding to a speech input;

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

performing natural language processing on the text string, the natural language processing comprising:
identifying a pronoun in the speech input; and
determining at least one name associated with the pronoun;
generating a search query including the at least one name;
identifying, from a collection of digital photographs, one or more digital photographs associated with a tag containing the at least one name; and
providing the one or more digital photographs to the user.
The problem to be solved by this subject-matter appears to be how to provide a user-friendly method and apparatus for searching/retrieving digital photographs.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2013/047659

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2009150147 A1	11-06-2009	US 2009150147 A1	11-06-2009
		WO 2009075754 A1	18-06-2009
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US 2011249144 A1	13-10-2011	NONE	