

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
18 October 2007 (18.10.2007)

PCT

(10) International Publication Number
WO 2007/118029 A3

- (51) International Patent Classification:
G10L 15/00 (2006.01) *G10L 15/06* (2006.01)
- (21) International Application Number:
PCT/US2007/065615
- (22) International Filing Date: 30 March 2007 (30.03.2007)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:

60/788,621	3 April 2006 (03.04.2006)	US
60/788,606	3 April 2006 (03.04.2006)	US
60/788,622	3 April 2006 (03.04.2006)	US
11/539,456	6 October 2006 (06.10.2006)	US
11/688,920	21 March 2007 (21.03.2007)	US
11/688,916	21 March 2007 (21.03.2007)	US
- (71) Applicant (for all designated States except US): **VO-COLLECT, INC.** [US/US]; 703 Rodi Road, Pittsburgh, PA 15235-4558 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **BRAHO, Keith** [US/US]; 3943 Murry Lane, Murrysville, PA 15668 (US). **PIKE, Jeffrey** [US/US]; 5070 Harvest Drive, Murrysville, PA 15668 (US). **EL-JAROUDI, Amro** [US/US]; 21

Fieldstone Drive, Pittsburgh, PA 15220 (US). **PIKE, Lori** [US/US]; 5070 Harvest Drive, Murrysville, PA 15668 (US). **LAUGHERY, Michael** [US/US]; 1820 Eagle Drive, Monroeville, PA 15146 (US).

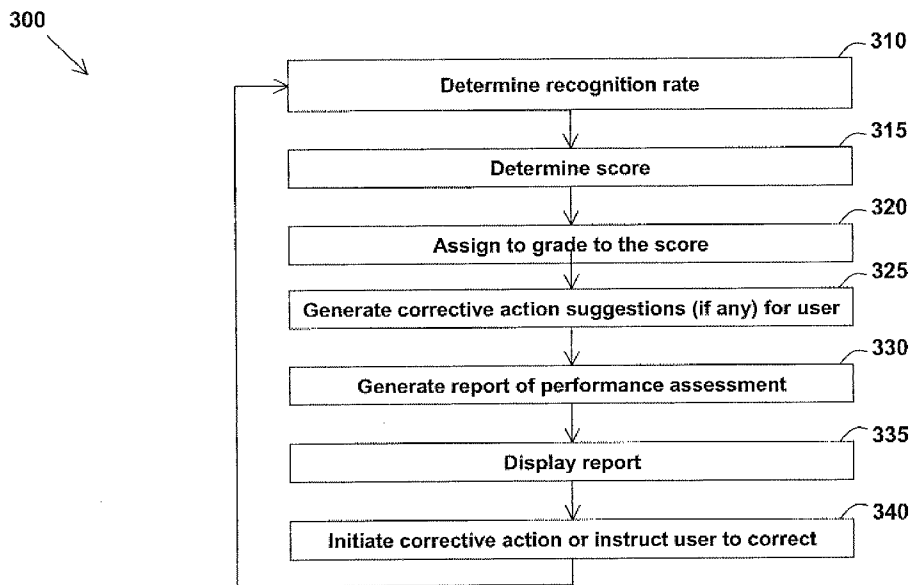
(74) Agents: **SUMME, Kurt, A.** et al.; Wood, Herron & Evans, L.L.P., 441 Vine Street, 2700 Carew Tower, Cincinnati, OH 45202 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, 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, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL,

[Continued on next page]

(54) Title: METHODS AND SYSTEMS FOR ASSESSING AND IMPROVING THE PERFORMANCE OF A SPEECH RECOGNITION SYSTEM



(57) Abstract: A method for assessing a performance of a speech recognition system may include determining a grade 315, 320, corresponding to either recognition of instances of a word or recognition of instances of various words among a set of words, wherein the grade indicates a level of the performance of the system and the grade is based on a recognition rate and at least one recognition factor. An apparatus for assessing a performance of a speech recognition system may include a processor 224 that determines a grade, corresponding to either recognition of instances of a word or recognition of instances of various words among a set of words, wherein the grade indicates a level of the performance of the system and wherein the grade is based on a recognition rate and at least one recognition factor.

WO 2007/118029 A3



PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(88) Date of publication of the international search report:
27 December 2007

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

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/US2007/065615

A. CLASSIFICATION OF SUBJECT MATTER
INV. G10L15/00 G10L15/06

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)
G10L

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2005/086055 A1 (SAKAI ET AL) 21 April 2005 (2005-04-21) abstract figures 6,10,13,16 page 1, paragraph 5-9 page 2, paragraph 16 page 3, paragraph 44-46 page 5, paragraph 54-56 page 6, paragraphs 66,73,74 page 7, paragraphs 81-83,92	1-37, 82-84
Y	WO 2005/119193 A (PHILIPS INTELLECTUAL PROPERTY [DE]; KONINKL PHILIPS ELECTRONICS NV [NL] 15 December 2005 (2005-12-15) abstract page 1, lines 26-28 page 6, lines 11-25 page 10, lines 7-18	1-37, 82-84

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

19 October 2007

Date of mailing of the international search report

06/11/2007

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

Santos Luque, Rocio

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/065615

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 6 606 598 B1 (HOLTHOUSE ET AL) 12 August 2003 (2003-08-12) abstract column 7, lines 5-11 column 11, lines 44-47 column 18, lines 34-64	8-11, 13, 18
X	US 2003/125945 A1 (DOYLE) 3 July 2003 (2003-07-03) page 1, paragraph 10-13 page 2, paragraph 15-17 page 3, paragraph 25-27 page 5, paragraph 61 page 6, paragraph 65 page 9, paragraphs 100, 101 page 7, paragraph 75-80 page 10, paragraphs 109, 118, 120	43-50, 53-56, 59, 62, 63, 67-74, 77, 80, 81, 87, 90
X	US 2002/177999 A1 (ORTEGA) 28 November 2002 (2002-11-28) abstract page 1, paragraph 12 - page 2, paragraph 17 page 3, paragraph 29-35 page 4, paragraph 38	43, 44, 53, 55, 57-61, 67, 68, 72, 73, 75-79, 81, 85-90
X	WO 2006/031752 A (SOLILOQUY LEARNING INC [US]; BARKER SIMON [US]; WOLF JARED J [US]) 23 March 2006 (2006-03-23) abstract page 7, last paragraph	43, 44, 51, 52, 67, 68

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2007/065615

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.:

1-37, 43-63, 67-90
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.
- 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: 1-37,82-84

Assessing performance of a speech recognition system

2. claims: 38-42,64-66

Model adaptation

3. claims: 43-63, 67-81, 85-90

Improving performance of speech recognition system

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2007/065615

Patent document cited in search report	Publication date	Patent family member(s)	Publication date	
US 2005086055	A1	21-04-2005	CN 1619643 A JP 2005084102 A	25-05-2005 31-03-2005
WO 2005119193	A	15-12-2005	CN 1965218 A	16-05-2007
US 6606598	B1	12-08-2003	NONE	
US 2003125945	A1	03-07-2003	US 2005171775 A1	04-08-2005
US 2002177999	A1	28-11-2002	NONE	
WO 2006031752	A	23-03-2006	US 2006069557 A1	30-03-2006