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[Continued on next page]

- (54) **Title:** GENERATING COMPUTER RESPONSES TO SOCIAL CONVERSATIONAL INPUTS

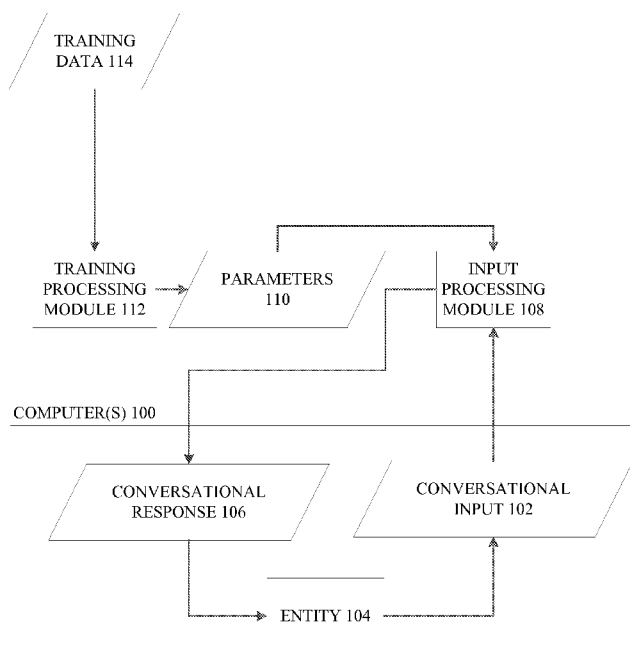


FIG.1

(57) **Abstract:** Conversational interactions between humans and computer systems can be provided by a computer system that classifies an input by conversation type, and provides human authored responses for conversation types. The input classification can be performed using trained binary classifiers. Training can be performed by labeling inputs as either positive or negative examples of a conversation type. Conversational responses can be authored by the same individuals that label the inputs used in training the classifiers. In some cases, the process of training classifiers can result in a suggestion of a new conversation type, for which human authors can label inputs for a new classifier and write content for responses for that new conversation type.



(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

Published:

- *with international search report (Art. 21(3))*
- *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))*

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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2015/038923

A. CLASSIFICATION OF SUBJECT MATTER
INV. G10L15/22 G06F17/27
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)
G10L 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, 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	P. HAFFNER ET AL: "Optimizing SVMs for complex call classification", 2003 IEEE INTERNATIONAL CONFERENCE ON ACOUSTICS, SPEECH, AND SIGNAL PROCESSING, 2003. PROCEEDINGS. (ICASSP '03)., vol. 1, 1 January 2003 (2003-01-01), pages I-632, XP055216298, DOI: 10.1109/ICASSP.2003.1198860 ISBN: 978-0-78-037663-2	1-10,14,15
Y	the whole document	11,13
A	GORIN A L ET AL: "AUTOMATED NATURAL SPOKEN DIALOG", COMPUTER, IEEE, US, vol. 35, no. 4, 1 April 2002 (2002-04-01), pages 51-56, XP001101793, ISSN: 0018-9162, DOI: 10.1109/2.993771 the whole document	1-9,14,15
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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

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"&" document member of the same patent family

Date of the actual completion of the international search

12 January 2016

Date of mailing of the international search report

22/01/2016

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INTERNATIONAL SEARCH REPORT

International application No

PCT/US2015/038923

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 2009/119102 A1 (BANGALORE SRINIVAS [US] ET AL) 7 May 2009 (2009-05-07)	1-10,14,15
Y	abstract; figure 2 paragraph [0002] - paragraph [0006] paragraphs [0013], [0015], [0026] paragraph [0032] - paragraph [0035] pages 39, 40 -----	11,13
X	US 2004/204940 A1 (ALSHAWI HIYAN [US] ET AL) 14 October 2004 (2004-10-14)	1-10,14,15
Y	abstract; claims 9, 10, 18; figure 1 paragraphs [0003], [0006], [0008], [0009] paragraph [0012] - paragraph [0027] paragraph [0036] paragraph [0041] - paragraph [0049] paragraph [0068]; table 1 -----	11,13
Y	US 7 280 965 B1 (BEGEJA LEE [US] ET AL) 9 October 2007 (2007-10-09) column 1, line 13 - line 34 column 7, line 17 - line 39 column 8, line 31 - line 48 -----	11,13
Y	G. TUR ET AL: "Active learning for spoken language understanding", 2003 IEEE INTERNATIONAL CONFERENCE ON ACOUSTICS, SPEECH, AND SIGNAL PROCESSING, 2003. PROCEEDINGS. (ICASSP '03)., vol. 1, 1 January 2003 (2003-01-01), pages I-276, XP055216303, DOI: 10.1109/ICASSP.2003.1198771 ISBN: 978-0-78-037663-2 abstract -----	11
Y	US 7 412 383 B1 (ALONSO TIRSO M [US] ET AL) 12 August 2008 (2008-08-12) abstract column 1, line 14 - line 32; figure 4 column 2, line 4 - line 12 column 5, line 36 - line 43 column 7, line 4 - column 8, line 16 -----	11,13

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2015/038923

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.:
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 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

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-9, 14, 15

Natural language understanding in a dialogue system

2. claims: 10-13

Training of classifiers for natural language understanding

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2015/038923

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2009119102	A1	07-05-2009	NONE
US 2004204940	A1	14-10-2004	CA 2394000 A1 18-01-2003 EP 1280136 A1 29-01-2003 US 2004204940 A1 14-10-2004
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