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[Continued on next page]

(54) Title: METHOD OF AND SYSTEM FOR INFERRING USER INTENT IN SEARCH INPUT IN A CONVERSATIONAL INTERFACTION SYSTEM

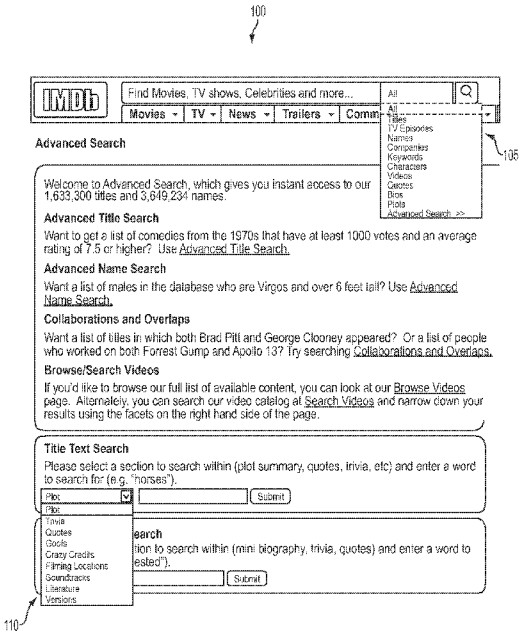

FIG. 1

(57) Abstract: A method of inferring user intent in search input in a conversational interaction system is disclosed. A method of inferring user intent in a search input includes providing a user preference signature that describes preferences of the user, receiving search input from the user intended by the user to identify at least one desired item, and determining that a portion of the search input contains an ambiguous identifier. The ambiguous identifier is intended by the user to identify, at least in part, a desired item. The method further includes inferring a meaning for the ambiguous identifier based on matching portions of the search input to the preferences of the user described by the user preference signature and selecting items from a set of content items based on comparing the search input and the inferred meaning of the ambiguous identifier with metadata associated with the content items.

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TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

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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))*

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 13/51288

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - G06F 17/20 (2014.01)
USPC - 704/1
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(8): G06F 17/20 (2014.01)
USPC: 704/1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
IPC(8): G06F 17/20 (2014.01)
USPC: 704/9 or 704/1 or 707/766 or 707/E17.07 or 707/E17.075 or 707/E17.095

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Patbase, Google (Scholar, Patent); infer, intent, conversation, dialog, chat, change, metadata, pronoun, noun

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2009/0144248 A1 (Treadgold et al.) 04 June 2009 (04.06.2009) entire document (especially para [0021]-[0022], [0026], [0073], [0081], Table 2, 3, 10)	1-19
Y	US 2011/0246496 A1 (Chung) 06 October 2011 (06.10.2011) entire document (especially para [0165], [0187])	1-19
Y	US 2009/0177745 A1 (Davis et al.) 09 July 2009 (09.07.2009) para [0041], [0067]	9, 18
Y	US 2012/0016678 A1 (Gruber et al.) 19 January 2012 (19.01.2012) entire document	19
A	US 2006/0149555 A1 (Fabbrizio et al.) 06 July 2006 (06.07.2006) entire document	1-19

☐ Further documents are listed in the continuation of Box C. ☐

* 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	Date of mailing of the international search report
27 February 2012 (27.02.2012)	21 MAR 2014
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 13/51288

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:

--- Please see extra 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 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.:
1-19

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.

Continuation of Box III:
This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I: Claims 1-19 are drawn to a method of inferring a change of a conversation session during continuous user interaction with an interactive content providing comprising:... the first input including linguistic elements intended by the user to identify at least one desired content item: associating...at least one linguistic element of the first input with a first conversation session; receiving...a second input from the user; inferring ...whether or not the second input from the user is related to the at least one linguistic element associated with the first conversation session; upon a condition in which the second input inferred to relate to the at least one linguistic element associated with the first conversation session, providing..a second response based on the metadata associated with the content items, the second input, and the at least one linguistic element of the first input associated with the first conversation session; and upon a condition in which the second input is inferred to not relate to the at least one linguistic element associated with the first conversation session, providing ? a second response based on the metadata associated with the content items and the second input.

Group II: Claims 20-37 are drawn to a method of inferring user intent in a search input based on resolving ambiguous portions of the search input, the method comprising:...the metadata associated with the content items including a mapping of relationships between entities associated with the content items; inferring a possible meaning for the at least one unspecified entity based on the at least one specified entity and the mapping of relationships between entities.

Group III: Claim 38-66 are drawn to a method of inferring user intent in a search input based on resolving ambiguous portions of the search input, the method comprising: providing a user preference signature, the user preference signature describing preferences of the user for at least one of (i) particular content items and (ii) metadata associated with the content items; receiving search input from the user, the search input being intended by the user to identify at least one desired content item; inferring a meaning for the ambiguous identifier based on matching portions of the search input to the preferences of the user described by the user preference signature.

The inventions listed as Groups I through III do not relate to a single general inventive concept under PCT Rule 13.1 because under PCT Rule 13.2 they lack the same or corresponding technical features for the following reasons:

Special Technical Features
The special technical feature of Group I is a method of inferring a change of a conversation session during continuous user interaction with an interactive content providing comprising:... the first input including linguistic elements intended by the user to identify at least one desired content item: associating...at least one linguistic element of the first input with a first conversation session; receiving...a second input from the user; inferring ...whether or not the second input from the user is related to the at least one linguistic element associated with the first conversation session; upon a condition in which the second input inferred to relate to the at least one linguistic element associated with the first conversation session, providing..a second response based on the metadata associated with the content items, the second input, and the at least one linguistic element of the first input associated with the first conversation session; and upon a condition in which the second input is inferred to not relate to the at least one linguistic element associated with the first conversation session, providing a second response based on the metadata associated with the content items and the second input, not required in any other group.

The special technical feature of Group II is a method of inferring user intent in a search input based on resolving ambiguous portions of the search input, the method comprising:...the metadata associated with the content items including a mapping of relationships between entities associated with the content items; inferring a possible meaning for the at least one unspecified entity based on the at least one specified entity and the mapping of relationships between entities, not required in any other group.

The special technical feature of Group III is a method of inferring user intent in a search input based on resolving ambiguous portions of the search input, the method comprising: providing a user preference signature, the user preference signature describing preferences of the user for at least one of (i) particular content items and (ii) metadata associated with the content items; receiving search input from the user, the search input being intended by the user to identify at least one desired content item; inferring a meaning for the ambiguous identifier based on matching portions of the search input to the preferences of the user described by the user preference signature, not required in any other group.

Common Technical Features

Group I through III share the technical feature each of the content items being associated with metadata that describes the corresponding content item; and receiving an input. However, this shared technical features does not represent a contribution over the prior art:

US 2011/0246496 A1 (Chung) 06 October 2011 (06.10.2011)

Chung teaches each of the content items being associated with metadata that describes the corresponding content item (e.g. defines different metadata for each content...the metadata may be data that may minutely and systematically define features of contents that are an object of the information provision/search, para [0160]-[0161]) and receiving an input (e.g. the information searcher requests the search by inputting keywords, para [0180]).

-Continuation in Next Supplemental Box-

-Continuation in Preceding Supplemental Box-

Group II through III share the technical feature inferring user intent in a search input based on resolving ambiguous portions of the search input; receiving search input from the user, the search input being intended by the user to identify at least one desired content item; selecting content items from the set of content items based on comparing the search input and the inferred meaning with metadata associated with the content items. However, this shared technical features does not represent a contribution over the prior art:

US 2011/0246496 A1 (Chung) 06 October 2011 (06.10.2011)

Chung teaches inferring user intent in a search input based on resolving ambiguous portions of the search input (e.g. the searcher's intention detector 105 indicates that the semantic information of the context awareness word `(Is there)` is `provide`, the context awareness word "(around hear)" is detected as a meaning that `current position that may be confirmed by GPS` is obtained, and ` (Italy restaurant)` is detected as the intention that it is required to search the restaurant database, respectively, para [0275]);

-receiving search input from the user, the search input being intended by the user to identify at least one desired content item (e.g. the information searcher requests the search by inputting keywords, the components to more accurately perform the search will be described in detail by inducing the detailed keyword input through the detection of the search intention. In this case, an example of the keywords input by the user may include words, phrases, and sentences, para [0180]); e.g. performing the search as keywords "120(used car of 1,200,000 won or less)" corresponds to the condition search, para [0271]);

-selecting content items from the set of content items based on comparing the search input and the inferred meaning with metadata associated with the content items (e.g. search directory determination device 109 determines the directory on the information DB 128 suitable to search the contents...determine the directory by referring to the searcher's intention detected by the searcher's intention detector 105 (para [0189]); search device 110 may search the contents having the exactly same metadata as the metadata in view of the structure and word and the same metadata as the metadata only in view of some of the structure and word...compares the metadata input through the editor for search 108 with the metadata configuring the contents searched by the search device 110 and selects and outputs only the contents having the high coincidence based on the comparison results (para [0192]-[0193]).

As the above common features were known in the art at the time of the invention, these cannot be considered a special technical feature that would otherwise unify the groups.

Therefore, Groups I - III lack unity under PCT Rule 13 because they do not share a same or corresponding special technical feature.