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Datasheet for the decision of 4 February 2015

Case Number: T 0306/10 - 3.5.07

Application Number: 01932840.0

Publication Number: 1464010

IPC: G06F17/30, G06F17/60

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Title of invention:
Relationship discovery engine

Applicant:
Yahoo! Inc.

Headword:
Relationship discovery/YAHOO!

Relevant legal provisions:
EPC Art. 56

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Inventive step - all requests (no)

Decisions cited:
T 1784/06, T 1741/08

Catchword:

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Case Number: T 0306/10 - 3.5.07

D E C I S I O N
of Technical Board of Appeal 3.5.07
of 4 February 2015

Appellant: (Applicant)	Yahoo! Inc. 701 First Avenue Sunnyvale, CA 94089 (US)
Representative:	Boult Wade Tennant Verulam Gardens 70 Gray's Inn Road London WC1X 8BT (GB)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 6 August 2009 refusing European patent application No. 01932840.0 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	R. Moufang
Members:	R. de Man
	M. Rognoni

Summary of Facts and Submissions

I. The applicant (appellant) appealed against the decision of the Examining Division refusing European patent application No. 01932840.0.

II. The Examining Division decided that the subject-matter of the independent claims lacked an inventive step in view of the following document:

D1: Nichols D.M. et al.: "Recommendation and Usage in the Digital Library", 1997, retrieved from the Internet: URL:ftp://ftp.comp.lancs.ac.uk/pub/reports/1997/CSEG.2.97.pdf.

III. With the statement of grounds of appeal, the appellant filed a main request and a first auxiliary request, the claims of the main request corresponding to those considered in the decision under appeal. The appellant further filed a copy of the following post-published document (numbering introduced by the Board):

D5: Webb R.: "I want what she wants", New Scientist, 20-27 December 2008, pages 52 to 55.

IV. In a communication dated 18 September 2014 accompanying a summons to oral proceedings to be held on 14 January 2015, the Board expressed the provisional opinion that the subject-matter of claim 1 of both requests lacked an inventive step.

V. With a letter dated 15 October 2014, the appellant requested that a new date be set for the oral proceedings, because its representative had a holiday booked for the period 26 December 2014 to 16 January 2015. The appellant further requested the

Board to choose a date in March or April 2015 in order to allow its representative time to return from vacation and prepare the written submissions prior to the oral proceedings.

In response, the Board informed the appellant that the oral proceedings were postponed to 4 February 2015.

VI. No written submissions commenting on the Board's communication were received.

VII. On 2 February 2015, in response to an enquiry by the Board's registrar, the appellant informally advised the Board that it would not be represented at the oral proceedings.

VIII. Oral proceedings were held in the absence of the appellant. At the end of the oral proceedings, the chairman pronounced the Board's decision.

IX. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the claims of the main request or, in the alternative, on the basis of the claims of the first auxiliary request.

X. Claim 1 of the main request reads as follows:

"A computer-implemented method of discovering relationships between items, comprising the steps of:
receiving item selections detected from observed behavior of each of a plurality of users;
generating a log (114) for each user, each log containing identifiers for the item selections detected from observed behavior of the respective user;

receiving a query (1402) including at least one query item identifier;
scoring each user log (114), the scoring being responsive to a degree of occurrence of the or each query item identifier in the respective user log so as to generate a score for each log that represents the relevance of the user log to the received query;
identifying (1404) a subset of user logs based on the scores generated for each user log; and
identifying at least one result item from the subset of user logs; characterized in that:
a result item comprises an item which is determined to be over-represented in the subset of user logs relative to the entire set of user logs in that it occurs more frequently in the subset of user logs than expected based on the occurrence of the item in the entire set of user logs."

XI. Claim 1 of the first auxiliary request reads as follows:

"A computer-implemented method of making recommendations based on a query, the method comprising the steps of:
receiving item selections detected from observed behavior of each of a plurality of users;
generating a log (114) for each user, each user log containing identifiers for the item selections detected from observed behavior of the respective user;
receiving a query (1402) including at least one query item identifier;
scoring each user log (114), the scoring being responsive to a degree of occurrence of the or each query item identifier in the respective user

log so as to generate a score for each user log that represents the relevance of the user log to the received query; and

identifying (1404) a subset of user logs based on the scores generated for each user log;

characterised in that the method comprises:

determining an item identified in the subset of user logs to be over-represented in the subset of user logs relative to the entire set of user logs if it occurs more frequently in the subset of user logs than expected based on the occurrence of the item in the entire set of user logs; and

outputting the item determined to be over-represented in the subset of user logs as a recommendation."

XII. The appellant's arguments relevant to this decision can be summarised as follows:

Whereas the Examining Division seemed to suggest that the only use for the invention was in direct marketing, it was clear from the description that the invention could also be used in non-business-related fields such as making better recommendations of content, e.g. songs, for a personalised radio station.

The problem of how to make good recommendations or identify good results was a technical problem, in particular when the method used generated better results or recommendations and helped save the end-user time and effort in having to search through large amounts of content. The concept of obtaining more relevant results in response to a query and thereby saving a user time was inherently technical. The invention solved this technical problem with a technical solution, namely by using a particular selection technique for selecting results that were

more likely to be relevant to or desired by the person making a query.

Part of the invention lay in the discovery of the previously unrecognised problem that generated recommendations and relationships might be skewed by certain generally popular items.

Furthermore, even if this problem was regarded as already known, the claimed solution was not obvious. Otherwise a discussion of this problem in document D5, published over eight years after the priority date of the application, would not have been necessary.

Reasons for the Decision

1. The appeal complies with the provisions referred to in Rule 101 EPC and is therefore admissible.

2. The appellant requested the Board to postpone the oral proceedings originally scheduled for 14 January 2015 in view of the pre-booked holiday of its representative and to choose a date in March or April 2015 in order to allow its representative time to return from vacation and prepare the written submissions prior to the oral proceedings.

   The Board acceded to the request for postponement, but did not consider it necessary to postpone the oral proceedings to March or April 2015. Since the summons was issued on 18 September 2014, the appellant had already been given sufficient time for preparation. The oral proceedings were therefore postponed to 4 February 2015.

3. *Background of the invention*

3.1 The present invention is concerned with the discovery of relationships between items on the basis of item selections of a plurality of users in the context of making user-specific recommendations.

3.2 The background section of the description explains *inter alia* that it is known for online commerce sites to keep track of user purchases and, on the basis of such purchases, to make recommendations of products and services likely to be of interest to a particular user. Such recommendations may be based on an analysis of the purchases of other users who have purchased the same products and services. This technique is said to lead to inaccurate results as relatively few data points may be available. A typical user may make four or five purchases annually from any particular online store, which is insufficient to develop a reasonably accurate user profile in a relatively short period of time. In addition, some purchases may be gifts, and may thus fail to accurately reflect personal preferences of the purchaser. Distortions may furthermore result from the fact that the merchant may not be able to easily determine whether the purchaser was satisfied with the product.

3.3 The background section further explains that a commonly used technique for making recommendations based on data analysis performed on observed user behaviour is to observe that people who buy a particular product X also tend to be more likely to buy a particular product Y. Thus, the system may suggest, to a user who is observed purchasing (or browsing) product X, that he or she may also be interested in product Y. This technique is said to often lead to inaccurate results, in particular when

the observed purchase is a relatively rare product. Relationships between such products tend to be overstated, since relatively few data points are available for both the purchased product and the suggested product. In addition, certain products, such as best-sellers, tend to appeal to virtually all consumers, so that co-occurrence is seen between a best-seller and nearly every other product.

4. *Main request - inventive step*

4.1 Claim 1 of the main request is directed to a computer-implemented method of discovering relationships between items. It starts with receiving, for a plurality of users, a set of "item selections", the item selection being "detected from observed behavior of each of a plurality of users". For each user, identifiers for the items selected by that user are stored in a "user log". Upon receipt of a query including at least one item identifier, a "score" is assigned to each user log. The Board understands this score to be a function of the number of occurrences of the at least one item identifier in the user log. Based on these scores, a subset of user logs is identified. The Board understands this step as being to select, for example, the ten user logs with the highest scores. From this subset of user logs at least one "result item" is identified, the result item being an item which "occurs more frequently in the subset of user logs than expected based on the occurrence of the item in the entire set of user logs".

4.2 The Board interprets the feature "receiving item selections detected from observed behavior of each of a plurality of users" merely as a step of receiving item selections of each of a plurality of users. Whether a

particular item selection is "detected from observed user behaviour" is not a property of the item selection, and the claim does not include separate steps of observing user behaviour and detecting item selections from the observed behaviour.

4.3 The subject-matter of claim 1 hence essentially amounts to a computer-implemented method of discovering relationships between items on the basis of item selections using an abstract mathematical algorithm.

A mathematical algorithm contributes to the technical character of a computer-implemented method only in so far as it serves a technical purpose (see decision T 1784/06 of 21 September 2012, reasons 3.1.1).

4.4 In the statement of grounds of appeal, the appellant essentially argued that the method of claim 1 solved the technical problem of obtaining more relevant results in response to a query and of saving a user time when performing a search. Besides its use in direct marketing, it could also be used in non-business-related fields such as making better recommendations of content, e.g. songs, for a personalised radio station.

However, the purpose of improving search results is not expressed in claim 1. The appellant's arguments therefore cannot convince.

4.5 In fact, claim 1 is not limited to any specific purpose other than the identification of at least one "result item" that bears a particular statistical relationship in terms of item selections to at least one "query item". In the Board's view, such a statistical aim does not constitute a technical purpose.

4.6 Since the mathematical algorithm does not contribute to the technical character of the claimed method, an inventive step can be present only in its technical implementation. However, the claim in this respect merely specifies that the method is "computer-implemented". While the claim does use wording such as "generating", "receiving" and "user log", these terms, although reinforcing the point that the algorithm is computer-implemented, do not imply any specific implementation details. The Board further has no doubt that the skilled person, who in this case is a computer programmer, would have no difficulty in implementing the steps of claim 1.

4.7 The conclusion is therefore that the subject-matter of claim 1 lacks an inventive step within the meaning of Articles 52(1) and 56 EPC over a notorious general-purpose computer.

4.8 For the sake of completeness, the Board notes that it would have reached the same conclusion had claim 1 been amended to include separate steps of observing user behaviour and detecting item selections from the observed behaviour (see point 4.2 above), as such steps are known in the art (see points 3.2 and 3.3) and do not lend the mathematical algorithm of claim 1 a technical character.

5. *First auxiliary request - inventive step*

5.1 Claim 1 of the first auxiliary request differs from claim 1 of the main request essentially in that the identified result item is outputted as a recommendation.

5.2 In the Board's view, the selection of an item, for example a song, for recommendation to a user does not qualify as a technical purpose. From a technical point of view it is irrelevant what songs are recommended to a user. While making "good" or "bad" recommendations may lead to different user reactions and thereby, in the end, to different technical results (the user might for example play more or fewer songs, or issue more or fewer search queries in order to find other songs), such results do not qualify as a technical effect of the recommendations, as they depend on subjective choices made by the user (cf. decision T 1741/08 of 2 August 2012, reasons 2.1.6).

5.3 It follows that the amendments to claim 1 cannot overcome the objection of lack of inventive step raised in respect of the main request. Hence, the subject-matter of claim 1 of the first auxiliary request likewise lacks an inventive step (Articles 52(1) and 56 EPC).

6. *Conclusion*

Since neither of the requests on file is allowable, the appeal is to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

I. Aperribay R. Moufang

Decision electronically authenticated