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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte CHIRANJIT ACHARYA

Appeal 2010-003919
Application 11/284,603
Technology Center 2100

Before ROBERT E. NAPPI, KRISTEN L. DROESCH, and JOHN G. NEW, *Administrative Patent Judges*.

NEW, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant appeals under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 1-18, which stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Publication No. 2004/0054572 A1 to Oldale et al. ("Oldale"), in view of U.S. Patent No. 6,981,040 B1 to Konig et al. ("Konig"), and also in view of Lyle H. Ungar, et al., *A Formal Statistical Approach to Collaborative Filtering*, Conference on Automated Learning and Discovery, 1-6 (1998) ("Ungar").

We reverse.

STATEMENT OF THE CASE

Appellant describes the present invention, entitled *User's Preference Prediction from Collective Rating Data* as follows:

> A computer-implemented method includes receiving a dataset representing a plurality of users, a plurality of items, and a plurality of ratings given to items by users; clustering the plurality of users into a plurality of user-groups such that at least one user belongs to more than one user-group; clustering the plurality of items into a plurality of item-groups such that at least one item belongs to more than one item-group; inducing a model describing a probabilistic relationship between the plurality of users, items, ratings, user-groups, and item-groups, the induced model defined by a plurality of model parameters; and predicting a rating of a user for an item using the induced model.

Abstract.

Independent claim 1 is representative[1]:

A computer-implemented method, comprising:

obtaining a dataset representing a plurality of users, a plurality of items, and a plurality of ratings given to items by users;

clustering the plurality of users into a plurality of user-groups such that at least one user belongs to more than one user-group;

clustering the plurality of items into a plurality of item-groups such that at least one item belongs to more than one item-group;

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[1] Appellant and Examiner agree that the Examiner's rejection of independent claims 1 and 10 were based upon the same reasoning. Appellant's Brief (App. Br.) 18; Examiner's Answer (Ex. Ans.) 4-8 and 12-15. Consequently, we choose claim 1 as representative.

> inducing a model describing a probabilistic relationship between the plurality of users, items, ratings, user-groups, and item-groups, the induced model defined by a plurality of model parameters; and
>
> predicting a rating of a user for an item using the induced model.

Claims 2-9 depend from claim 1 and claims 11-18 depend from claim 10. Appellant admits that, for purposes of the instant appeal, the applicant is content to rely upon the arguments raised with respect to claims 1 and 10 for all of the claims.

ISSUES

Claims 1 and 10

The Examiner concludes that the claims are unpatentable as obvious under 35 U.S.C. § 103(a) over the combination of prior art references Oldale, Konig, and Ungar. Specifically, the Examiner concludes that it would have been obvious for an artisan of ordinary skill to combine the teachings of Oldale with the teachings of Konig by modifying Oldale such that when customers of Oldale are sorted into groups or clusters based on profile similarity, a user is sorted into multiple clusters based on similarities to multiple groups as in Konig. Ex. Ans. 6.

Furthermore, the Examiner finds, although neither Oldale nor Konig specifically disclose inducing a model describing a probabilistic relationship between the plurality of user-groups, and item-groups, Ungar discloses inducing a model describing a probabilistic relationship between a plurality of user-groups and item-groups. Ex. Ans. 7. The Examiner concludes, at the time of invention it would have been obvious to a person having ordinary skill in the art to combine the teachings of Oldale and

Konig with the teachings of Ungar. Ex. Ans. 7. The motivation for so doing would have been to allow the combined system of Oldale and Konig to include a probabilistic model in which there are link probabilities between clusters of users and items. Ex. Ans. 8. Did the Examiner err in concluding that it would have been obvious to a person of ordinary skill in the art to combine the teachings of Oldale, Konig, and Ungar, thereby rendering Appellant's claimed invention obvious at the time of invention?

ANALYSIS

For the Examiner to establish a *prima facie* case of obviousness in view of a combination of prior art references, a proper analysis under § 103 requires, *inter alia*, consideration of two factors: (1) whether the prior art would have suggested to those of ordinary skill in the art that they should make the claimed composition or device, or carry out the claimed process; and (2) whether the prior art would also have revealed that in so making or carrying out, those of ordinary skill would have a reasonable expectation of success. *See In re Dow Chemical Co.*, 837 F.2d 469, 473 (Fed. Cir. 1988). Because the Examiner has failed to meet at least one of these requirements, we reverse the Examiner's rejection of the claims.

Claims 1 and 10 both recite "inducing a model describing a probabilistic relationship between the plurality of users, items, ratings, user-groups, and item-groups, the induced model defined by a plurality of model parameters." The Examiner finds that Ungar discloses "inducing a model describing a probabilistic relationship between the plurality of user-groups, and item-groups." Ex. Ans. 7. The Examiner points to Ungar's teaching of Gibbs Sampling as a "'probabilistic model in which people and the items they view or buy are each divided into (unknown) clusters and there are link

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