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BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte XIAOYUAN WU and ALVARO BOLIVAR

Appeal 2014-009604[1]
Application 12/498,209
Technology Center 3600

Before: MURRIEL E. CRAWFORD, JOSEPH A. FISCHETTI, and MICHAEL W. KIM, *Administrative Patent Judges*.

KIM, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF CASE

This is an appeal from the final rejection of claims 1–3, 5–10, 12–15, 17–22, and 24–26. We have jurisdiction to review the case under 35 U.S.C. §§ 134 and 6.

The invention relates generally to predicting sales of item listings within a network-based transaction system. Spec. para. 2.

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[1] The Appellants identify eBay Inc. as the real party in interest. Appeal Br. 2.

Claim 1 is illustrative:

1. A method to rank search results comprising:

accessing, using one or more processors within a network-based system, historical transaction data;

selecting, using the one or more processors, a plurality of predictive features that are predictive of an item being sold over the network-based system, selecting the plurality of predictive features includes using a regression model to determine the plurality of predictive features with the highest correlation to items being sold, wherein the selecting includes selecting a category related feature, a seller related feature, and an item related feature;

creating, using the one or more processors, a training data set including extracting the plurality of predictive features from the historical transaction data;

creating, using the one or more processors, a prediction model based on the training data set to predict a probability that an item offered for sale by an item listing published on the network-based system will be sold;

receiving a search request on the network-based system;

generating, using the one or more processors, a list of search results based on the search request;

ranking, using the one or more processors, the list of search results using the prediction model; and

presenting, using the one or more processors, the ranked search results.

Appellants appeal the following rejection.

Claims 1–3, 5–10, 12–15, 17–22, and 24–26 are rejected under 35 U.S.C. § 103(a) as unpatentable over Mallon (US 2003/0004781 A1, pub. Jan. 2, 2003), Pirolli (US 6,272,507 B1, iss. Aug. 7, 2001), and Angelika Dimoka and Paul A. Pavlou, "Understanding and Mitigating Product Uncertainty in Online Auction Marketplaces", Industry Studies 2008 Annual Conference, Alfred P. Sloan Foundation, May 1–2, 2008 (hereinafter "Dimoka").

We REVERSE.

ANALYSIS

Rejection under 35 U.S.C. § 103(a)

Each of independent claims 1, 8, 13, and 20 recite limitations substantially equivalent to "selecting the plurality of predictive features includes using a regression model to determine the plurality of predictive features with the highest correlation to items being sold."

We are persuaded by Appellants' arguments that Mallon fails to disclose selecting predictive features using a regression model to determine features with the highest correlation. Appeal Br. 12–17; *see also* Reply Br. 1–3.

The Examiner asserts that Mallon discloses selecting which predictive features to rely on, and using regression to assist with that selection, at paragraphs 30, 31, 33, 36, 58, 59, 72, 75, and 76. Ans. 3–4, 20–25.

Mallon discloses predictions based on "interest data **112**" (para. 32) and, potentially, "characteristics data **114**" (para. 34), and articulates a wide range of data that could be used as inputs to a prediction model (paras. 30–72). However, Mallon says almost nothing about what is involved in selecting which input data to use as predictive features. In a specific embodiment related to "box office sales of a movie," Mallon discloses the input data is "determined through experimentation to provide accurate predictions of a measure of economic activity related to movies." Mallon, para. 73. Experimentation does not equate to using regression.

In addition, although Mallon discloses the use of regression, it is not in the context of selecting input data as predictive features, but instead for

tuning the model to generate weights to assign to the impact of those features already determined to be significant. *Id.* at para. 36.

Although weighting could, conceivably, be a form of selection, such as by excluding data with a weight of zero, the claim specifically recites both a selection step and a step that "creates" a model. While Mallon's training of the model using training set data and the application of weights to the input predictive features may correlate with the claimed model creation, it is nevertheless distinct from the selection of predictive features themselves. *See, e.g.,* para. 36:

> Generally, the model applies weights to various data comprising the on-line interest data **112** relating to the subject, and, if used, data **114** relating to characteristics of the subject, and combines the weighted data to generate a value that is a predicted measure of aggregate behavior related to the subject. In these embodiments, the behavior predictor **110** is trained using a learning data set that includes data on events that have occurred in the past.

Therefore, Mallon does not explicitly disclose any method for selection of predictive features, other than via "experimentation." *Id.* at para. 73.

The Examiner does articulate a link between selecting and weighting, stating "Mallon teaches of using regression to select/weight certain inputs or features." Ans. 22. The Examiner, however, does not provide any further analysis, which is necessary, given that we determine that the disclosure of "weighting" in Mallon is not the same as the recited "selecting" for the reasons set forth above.

For these reasons, we do not sustain the rejection of claims 1, 8, 13, and 20 under 35 U.S.C. § 103(a). We also do not sustain the rejection of dependent claims 2, 3, 5–7, 9, 10, 12, 14, 15, 17–19, 21, 22, and 24–26 that were rejected along with the independent claims.

DECISION

We REVERSE the rejection of claims 1–3, 5–10, 12–15, 17–22, and 24–26 under 35 U.S.C. § 103(a).

REVERSED