Paper No. 16

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte ALAN J. KATZ

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Appeal No. 95-0633
Application 07/728,426[1]

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ON BRIEF

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Before HAIRSTON, KRASS, and JERRY SMITH, Administrative Patent Judges.

JERRY SMITH, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134 from the examiner's rejection of claims 22-25, which constitute all the claims remaining in the application.

[1] Application for patent filed July 11, 1991.

The invention pertains to a method for training a neural network classifier.

Representative claim 22 is reproduced as follows:

22. A method of training a neural network classifier, comprising the steps of:

(a) providing a first set of target points Z_1, Z_2, ... Z_L in a feature space;

(b) forming an estimated target probability density P on said feature space from said target points Z_1, Z_2, ... Z_L;

(c) providing a second set of target points W_1, W_2, ... W_M in said feature space;

(d) defining a threshold T from the number of W_j with $P(W_j) > T$ and the number of W_j with $P(W_j) < T$;

(e) providing a third set of points X_1, X_2, ... X_N in said feature space, and forming a set of pairs (X_j, Y_j) where Y_j is "target" when $P(X_j) > T$ and Y_j is "clutter" when $P(X_j) < T$; and

(f) using the pairs (X_1, Y_1), (X_2, Y_2), ..., (X_j, Y_j), ..., (X_N, Y_N) as input/output pairs to train a neural network classifier.

The examiner relies on no references.

Claims 22-25 stand rejected under 35 U.S.C. § 101 as being directed to nonstatutory subject matter in the form of a mathematical algorithm. Claims 22-25 also stand rejected under 35 U.S.C. § 112, second paragraph, as failing to particularly point out and distinctly claim the invention.

Rather than repeat the arguments of appellant or the examiner, we make reference to the brief and the answer for the respective details thereof.

OPINION

We have carefully considered the subject matter on appeal, the rejections advanced by the examiner and the reasons relied upon by the examiner as support for the rejections. We have, likewise, reviewed and taken into consideration, in reaching our decision, the appellant's arguments set forth in the brief along with the examiner's rationale in support of the rejections and arguments in rebuttal set forth in the examiner's answer.

It is our view, after consideration of the record before us, that claims 22-25 are directed to statutory subject matter within the meaning of 35 U.S.C. § 101. We are also of the view that claims 22-25 recite the invention in a manner which complies with 35 U.S.C. § 112. Accordingly, we reverse.

We consider first the rejection of claims 22-25 under 35 U.S.C. § 101 as being directed to nonstatutory subject matter in the form of a mathematical algorithm. The brief and

examiner's answer were filed in 1994. The Board remanded this case to the examiner in 1995 for consideration of the applicability of the Commissioner's published "Examination Guidelines for Computer-Implemented Inventions." On remand, the examiner determined that the rejection under 35 U.S.C. § 101 was still proper, and the case is now before us for decision on the merits.

The examiner's rejection applies the two-step test which is now commonly referred to as the Freeman-Walter-Abele test. See In re Freeman, 573 F.2d 1237, 197 USPQ 464 (CCPA 1978) as modified by In re Walter, 618 F.2d 758, 205 USPQ 397 (CCPA 1980). The test has been thus articulated:

> First, the claim is analyzed to determine whether a mathematical algorithm is directly or indirectly recited. Next, if a mathematical algorithm is found, the claim as a whole is further analyzed to determine whether the algorithm is "applied in any manner to physical elements or process steps," and, if it is, it "passes muster under § 101."

In re Pardo, 684 F.2d 912, 915, 214 USPQ 673, 675-76 (CCPA 1982)

(citing In re Abele, 684 F.2d 902, 214 USPQ 682 (CCPA 1982)). Although the examiner applied the Freeman-Walter-Abele test in

a manner which was consistent with the law at that time, the most recent decisions of the Court of Appeals for the Federal Circuit cast substantial doubt on the propriety of this test.

It is the current view of the court that unpatentable mathematical algorithms are identifiable by showing that they are merely abstract ideas constituting disembodied concepts or truths that are not "useful." From a practical standpoint, this means that to be patentable an algorithm must be applied in a "useful" way. See State Street Bank & Trust Co. v. Signature Financial Group, Inc., 149 F.3d 1368, 47 USPQ2d 1596 (Fed. Cir. 1998).

Independent claim 22 is directed to a method for training a neural network classifier. Pairs of data points are determined and used as input/output pairs to train a neural network classifier. We are of the view that the training of a neural network clearly has practical utility. Even if the mathematical algorithm by which the data pairs are determined can be considered an abstract idea, that abstract idea is clearly employed in a useful way. The transformation of data through a series of mathematical calculations to produce input/output training pairs for a neural network classifier

constitutes a practical application of the abstract idea or mathematical algorithm because it produces a useful, concrete and tangible result. Id. Since the claimed invention has practical application for the reasons just discussed, we do not sustain

the rejection of claims 22-25 under 35 U.S.C. § 101.

We now consider the rejection of claims 22-25 under the second paragraph of 35 U.S.C. § 112. The examiner's rejection states the following:

> As per claim 1 [sic, 22], "providing" is not a physical step in a method claims [sic], applicant must set forth the actual steps being performed such as "generating" etc. [answer, page 5].

Appellant responds that "providing" is just as definite as "generating" [brief, page 3]. The examiner replies that "providing" is not "analogous to generating because providing can mean anything, and it is not definite because providing can mean inputting, outputting, or defining, which concludes that 'providing' is indeed indefinite" [answer, page 6].

We fail to see any indefiniteness in the step of providing or why the step of generating would make the scope

of the invention clearer to the artisan. The examiner's concern about the breadth of the term providing should not be equated with indefiniteness. Breadth and indefiniteness are two different concepts. We are of the view that the artisan who has read the disclosure of this application would clearly understand the metes and bounds of the claimed invention. Therefore, we do not sustain the rejection of claims 22-25 under 35 U.S.C. § 112.

In summary, we have not sustained either of the examiner's rejections of claims 22-25. Therefore, the decision of the examiner rejecting claims 22-25 is reversed.

REVERSED

Kenneth W. Hairston)
Administrative Patent Judge)
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Errol A. Krass	)	BOARD OF PATENT
Administrative Patent Judge	)	APPEALS AND
	)	INTERFERENCES
	)	
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Jerry Smith	)	
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