

The opinion in support of the decision being entered today was *not* written for publication and 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 DAVID E. HECKERMANN, CHRISTOPHER A. MEEK  
and BO THIESSON

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Appeal No. 2006-2143  
Application No. 09/873,719

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HEARD ON SEPTEMBER 13, 2006

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Before KRASS, RUGGIERO, and SAADAT, Administrative Patent Judges.  
RUGGIERO, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal from the final rejection of claims 1-64, which are all of the claims pending in this application. An amendment filed July 11, 2005 after final rejection was denied entry by the Examiner.

The claimed invention relates to the development of a statistical model for data in which a model is constructed for an initial subset of the data by applying the model to a holdout data set of the data. Upon determination that the model is not acceptable, additional data is added to the data subset and a first parameter estimation algorithm is repeated until an appropriate subset of the data for construction of the model is determined to exist. A second parameter estimation algorithm, which may be different from the first algorithm or a more accurate version of the first algorithm, is applied to the determined appropriate data subset to construct a refined and more accurate statistical model of the data.

Claim 1 is illustrative of the invention and reads as follows:

1. A computer implemented system that facilitates building a statistical model for a computer readable data set, comprising:

a first training algorithm that efficiently builds a rough model from a subset of the computer readable data set;

an evaluation component that determines whether the subset of the computer readable data set is an appropriate subset to build a model for the computer readable data set; and

a second training algorithm that builds a refined model for the computer readable data set from the subset if deemed appropriate by the evaluation component.



Appeal No. 2006-2143  
Application No. 09/873,719

considered in this decision. Arguments which Appellants could have made but chose not to make in the Briefs have not been considered and are deemed to be waived [see 37 CFR § 41.37(c)(1)(vii)].

It is our view, after consideration of the record before us, that claims 1-64 are directed to non-statutory subject matter within the meaning of 35 U.S.C. § 101. It is also our view that the claims are not supported by an adequate disclosure under the first paragraph of 35 U.S.C. § 112. Further, it is our opinion that the disclosure of Guha fully meets the invention as recited in claims 1, 19, 30, 42, and 64. Accordingly, we affirm.

With respect to the 35 U.S.C. § 101 non-statutory subject matter rejection of claims 1-64, it is the Examiner's position that the claimed subject matter is directed to the mere manipulation of "a set of abstract 'computer readable data sets' to solve purely algorithmic problems in the abstract ...." (Answer, page 7). According to the Examiner (*id.*, at 8), the claimed invention does not produce a useful, concrete and tangible result since all that is involved is the "algorithmic manipulation of abstract ideas."

Appeal No. 2006-2143  
Application No. 09/873,719

After reviewing the arguments of record and the Examiner's analysis (Answer, pages 4-10 and 13-20), we are in general agreement with the Examiner's position as stated in the Answer. We note, initially, that the Federal Circuit has spoken on the issue of the determination as to whether claimed subject matter is non-statutory in State Street Bank & Trust Co. v. Signature Financial 149 F.3d 1368, 1375, 47 USPQ2d 1596, 1602 (Fed. Cir. 1998) where the court concluded: "The question of whether a claim encompasses statutory subject matter should not focus on which of the four categories of subject matter a claim is directed to . . . but rather on the essential characteristics of the subject matter, in particular, its practical utility." Further, in analyzing the particular claimed subject matter before the court, the State Street court stated "the transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm . . . because it produces 'a useful, concrete and tangible result' . . . ." State Street Bank 149 F.3d at 1373, 47 USPQ2d at 1601. The above-stated principles have also been reinforced in AT&T Corp. v. Excel Communications, Inc., 172 F.3d 1352, 50 USPQ2d 1447 (Fed. Cir. 1999).

Applying these principles to the instant claimed subject matter, we find no error in the Examiner's finding that the

Appeal No. 2006-2143  
Application No. 09/873,719

claimed features of applying an algorithm to a data subset to build a model, evaluating the appropriateness of the data subset used to build the model, and refining the model by applying a second algorithm to the data subset merely involves an algorithmic manipulation of abstract ideas that does not produce "a useful, concrete and tangible result." As discussed supra, the State Street test requires that subject matter be "useful" and "concrete" and "tangible". In our view, the generation, evaluation, and refinement of a "model" has no tangible significance because the term "model" does not necessarily imply a physical quantity.

Further, while Appellants argue (Brief, page 8) that the claimed end result refined model could be employed in connection with applications such as "clustering, data mining, etc.," we do not find this argument to be persuasive. While the specification gives several examples of possible applications of the claimed statistical modeling technique that could conceivably be considered to result in something concrete and tangible, the claims are not limited to any of these potential applications.

We also find to be unpersuasive Appellants' related argument that the development of a refined statistical model is an end result which is useful, concrete and tangible. It is our opinion that the manipulation of an abstract idea in the form of a

Appeal No. 2006-2143  
Application No. 09/873,719

statistical model to produce a refined statistical model produces nothing more than a refined abstract idea. As the Federal Circuit stated in In re Warmerdam, 33 F.3d 1354, 1360, 31 USPQ2d 1754, 1759 (Fed. Cir. 1994):

As the Supreme Court has made clear, “[a]n idea of itself is not patentable,” Rubber-Tip Pencil Co. v. Howard, 87 U.S. (20 Wall.) 498, 507 (1874); taking several abstract ideas and manipulating them together adds nothing to the basic equation.

We further find to be without merit Appellants’ reliance on the Federal Circuit decision in Eolas Technologies., Inc. v. Microsoft Corp., 399 F.3d 1325, 73 USPQ2d 1782 (Fed. Cir. 2005) in support of their contention that the claims recite statutory subject matter. According to Appellants (Brief, page 9; Reply Brief, pages 5 and 6), since the cited case stands for the principle that software code is patentable per se, the claimed invention is directed to statutory subject matter because the end result is provided through the execution of software code.

Our review of the Eolas Technologies decision finds little support for the interpretation proffered by Appellants. The Eolas Technologies case was an infringement case in which a critical issue was the determination of whether software code included on a master disk was a component of a computer program invention so as to make a supplier of such master disk liable for

Appeal No. 2006-2143  
Application No. 09/873,719

infringement under 35 U.S.C. § 271. While the Court in Eolas Technologies stated that software code is eligible for patenting, at least as a process, this is a far cry from Appellants' contention that a patent claim directed to software code per se is therefore statutory subject matter. In our view, to accept Appellants' interpretation of the decision in Eolas Technologies would necessarily result in an evisceration of the "useful, concrete, and tangible" test for statutory subject matter set forth in the line of cases beginning with State Street. That the Federal Circuit intended to do no such thing is evidenced by the fact that nowhere in the Eolas Technologies decision is the State Street decision and its extensive analysis of claimed subject matter according to whether such subject matter produces a "useful, concrete, and tangible" result ever mentioned.

For all of the above reasons, since it is our view that the claimed subject matter is not directed to subject matter which has a practical utility, but instead is simply an abstraction, i.e., not concrete and tangible, of an idea for developing a refined statistical model from a data subset, the Examiner's non-statutory subject matter rejection of claims 1-64 under 35 U.S.C. § 101 is sustained.

We also sustain the Examiner's 35 U.S.C. § 112, first

Appeal No. 2006-2143  
Application No. 09/873,719

paragraph, rejection of claims 1-64 as being supported by a disclosure which is not in compliance with the "how to use" provision of the statute. As recognized by Appellants (Brief, pages 9 and 10; Reply Brief, pages 6 and 7), this rejection is essentially a pro forma rejection tied to the 35 U.S.C. § 101 rejection based on non-statutory claimed subject matter. Appellants have made no arguments with respect to this particular rejection, but instead have relied on arguments made with respect to the 35 U.S.C. § 101 rejection, which arguments we found to be unpersuasive as discussed supra.

We next consider the Examiner's 35 U.S.C. § 102(b) rejection of claims 1, 19, 30, 42, and 64 based on Guha. At the outset, we note that it is well settled that anticipation is established only when a single prior art reference discloses, expressly or under the principles of inherency, each and every element of a claimed invention as well as disclosing structure which is capable of performing the recited functional limitations. RCA Corp. v. Applied Digital Data Systems, Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir.1984); W.L. Gore and Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 1554, 220 USPQ 303, 313 (Fed. Cir. 1983).

With respect to claims 1, 19, 30, 42, and 64, the Examiner indicates (Answer, pages 12 and 22-25) how the various limitations are read on the disclosure of Guha. In particular,

Appeal No. 2006-2143  
Application No. 09/873,719

the Examiner directs attention to Guha's Figure 2 illustration as well as the disclosure beginning at column 2, line 63 of Guha.

In our view, the Examiner's analysis is sufficiently reasonable that we find that the Examiner has as least satisfied the burden of presenting a prima facie case of anticipation. The burden is, therefore, upon Appellants to come forward with evidence and/or arguments which persuasively rebut the Examiner's prima facie case.

Appellants' arguments in response assert that the Examiner has not shown how each of the claimed features is present in the

Appeal No. 2006-2143  
Application No. 09/873,719

disclosure of Guha so as to establish a case of anticipation. In particular, Appellants' arguments (Brief, pages 10-12; Reply Brief, pages 7 and 8) focus on the contention that, in contrast to the claimed invention, Guha does not provide for the development of a model from a subset of a computer readable data set. According to Appellants, Guha, while operating on data in the form of bit stream designs designated as "blueprints," does not operate on data which can be reasonably interpreted as being from a subset of a data set to be modeled.

After reviewing the Guha reference in light of the arguments of record, however, we are in general agreement with the Examiner's position as stated in the Answer. With the initial observation that both Appellants and the Examiner agree (Reply Brief, page 7) that a subset of data could include the entire data set, we simply find no error in the Examiner's finding (Answer, pages 12 and 22-25) that the blueprint bit string designs 20 in Guha represent a subset of data to be modeled. As disclosed, for example, at column 16, lines 55-63 of Guha, neural network architectures are developed from a subset of blueprints and trained according to a first algorithm. Evaluation testing is performed on the network architectures (referred to as "models' at column 17, line 2 of Guha), fitness of the models are

Appeal No. 2006-2143  
Application No. 09/873,719

determined, and a second algorithm is applied to the best fitness candidates (Guha, column 17, lines 12-18).

In view of the above discussion, since all of the claimed limitations are present in the disclosure of Guha, the Examiner's 35 U.S.C. § 102(b) rejection of claims 1, 19, 30, 42, and 64, is sustained.

In summary, we have sustained all of the Examiner's rejections of the claims on appeal. Therefore, the decision of the Examiner rejecting claims 1-64 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR

Appeal No. 2006-2143  
Application No. 09/873,719

§ 1.136(a)(1)(iv) (effective September 13, 2004).

AFFIRMED

ERROL A. KRASS	)	
Administrative Patent Judge	)	
	)	
	)	
	)	BOARD OF PATENT
JOSEPH F. RUGGIERO	)	
Administrative Patent Judge	)	APPEALS AND
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	)	INTERFERENCES
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MAHSHID D. SAADAT	)	
Administrative Patent Judge	)	

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Appeal No. 2006-2143  
Application No. 09/873,719

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