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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte KUN LIU and EVIMARIA TERZI

Appeal 2012-008890
Application 12/134,279¹
Technology Center 2600

Before ELENI MANTIS MERCADER, ROBERT E. NAPPI, and
CARL L. SILVERMAN, *Administrative Patent Judges*.

SILVERMAN, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's final rejection of claims 1–25. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM-IN-PART.

STATEMENT OF THE CASE

Appellants' invention relates to generating an anonymous graph of a network in which nodes represent identities and edges represent relationships and wherein privacy of the nodes is improved. Abstract, Spec., 48. Claim 1 is exemplary of the matter on appeal:

¹ The Real Party in Interest is International Business Machines Corporation. (App. Br. 1).

1. A computer-based method as executed by a processor for generating an anonymous graph of a network while preserving individual privacy and the basic structure of the network, said processor executing computer readable program code stored in non-transitory computer storage medium to implement a method comprising the steps of:

- (a) receiving an input graph $G(V, E)$, wherein V is the set of nodes in said input graph and E is the set of edges in the input graph;
- (b) determining a degree sequence d of the input graph $G(V, E)$, wherein d is a vector of size $n = |V|$, such that $d(i)$ represents a degree of the i^{th} node of the input graph $G(V, E)$;
- (c) applying a programming algorithm to the degree sequence d to construct a new degree sequence d' , wherein the new degree sequence d' has an integer k degree of anonymity wherein, for every element v in sequence d' , there are at least $(k-1)$ other elements taking the same value as v , and wherein said programming algorithm minimizing distance between the degree sequence d and the new degree sequence d' ;
- (d) constructing an output graph $\hat{G}(V, \hat{E})$ based on the new degree sequence d' ; and
- (e) outputting the constructed output graph $\hat{G}(V, \hat{E})$, wherein \hat{E} is the new set of edges in the output graph, and such that $\hat{E} \cap E = E$ or $\hat{E} \cap E \approx E$ (relaxed version).

App. Br. 11(Claims Appendix.)

REJECTIONS

The following rejections are before us for review:

Claims 1–25 stand rejected under 35 U.S.C. § 112, first and second paragraphs.

Claims 1–25 stand rejected under 35 U.S.C. § 101.

ANALYSIS

The 35 U.S.C. § 112, paragraph 1, rejection

The Examiner finds that there is no enabling disclosure of the programming algorithm of step (c) to make the “new degree sequence d” in the Specification, nor in the excerpt from Graph Text Theory book by Diestel cited by Appellants in the Appeal Brief. This limitation is recited in independent claims 1 and 15. Ans. 7–8, 10.

Appellants argue in conclusory fashion in the Appeal Brief that one of ordinary skill in the art with a basic knowledge of graph theory would understand how a degree sequence is constructed, and provide an excerpt from Graph Theory book by Diestel as support. App. Br. 7–8. In the Reply, Appellants provide additional explanation why they believe Diestel enables one of ordinary skill in the art to make the new degree sequence d. App. Br. 7–8, Reply Br. 2–4.

Appellants’ arguments are not persuasive of error by the Examiner because the Diestel text does not provide sufficient description to demonstrate that one of ordinary skill in the art would understand how to make the claimed new degree sequence d given the disclosure in Appellants’ Specification. Appellants’ arguments in the Appeal Brief recite the claim language without sufficiently explaining how the text and Specification enable one of ordinary skill in the art. Further, Appellant’s arguments in the Reply Brief, which provide additional explanation have not been considered as they are presented for the first time in the Reply Brief and deemed waived. *See, e.g., Ex parte Borden*, 93 USPQ2d 1473, 1474 (BPAI 2010) (informative) (“[T]he reply brief [is not] an opportunity to make arguments

that could have been made in the principal brief on appeal to rebut the Examiner's rejections, but were not.”).

In view of the above, we sustain the 35 U.S.C. § 112, paragraph 1, rejection of claims 1–25.

The 35 U.S.C. § 112, paragraph 2, rejection of claims 1–25

The Examiner finds that the claims

Do not provide sufficient particularity and clarity to inform skilled artisans of the bounds of the claim. Whom or what performs the abstract method steps is not claimed since the mechanism by which the claim's abstract method steps are implemented is subjective or imperceptible and since the metes and bounds of the claimed computer is unclear.

Ans. 9.

Appellants argue that one of ordinary skill in the art would know the metes and bounds of the claims because the method is “extremely specific and precise with regards to how the output graph is constructed and output [sic].” App. Br. 7–8, Reply Br. 4.

Appellants' argument is not persuasive of error by the Examiner because it does not address “who or what performs the abstract method steps” of claim 1. The preamble recites a “computer based method as executed by a processor” but the method steps do not refer back to the preamble terms and one of ordinary skill in the art would not know the scope of the claims with reasonable certainty. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process

steps or structural limitations are able to stand alone. *See In re Hirao*, 535 F.2d 67 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152 (CCPA 1951).

Accordingly, we sustain the 35 U.S.C. § 112, paragraph 2, rejection of claim 1, and its dependent claims 2–14.

Appellants’ argument is persuasive of error by the Examiner with respect to independent claim 15, which recites “computer readable program code” implementing each of the method steps.

Accordingly we do not sustain the 35 U.S.C. § 112, paragraph 2, rejection of claim 15, and its dependent claims 16–25.

The 35 U.S.C. § 101 Rejection

The Examiner rejected the claims as being directed to an abstract idea and lacking necessary indicia for patent eligibility:

because the method claimed in both sets of claims is directed to abstract idea steps which:

1) are not tied to a particular apparatus because only abstract method steps are claimed with no particular machine or apparatus being claimed;

2) do not transform underlying subject matter because no physical transformation is claimed; and

3) do not clearly claim the mechanism by which the claim's abstract mathematical idea steps are implemented. Computer-based method claims 1-14 claim abstract method steps and do not claim a particular machine or apparatus or physical transformation of an article or thing. At the most the abstract mathematical method in method claims 1-14 are in connection with mathematical operations within a general purpose processor which has been held to not be a particular machine or apparatus.

Ans. 10.

Appellants' argue that independent claim 1 is directed toward a computer-based method with very specific steps that outputs a constructed output graph and that independent claim 15 includes a non-transitory computer medium storing computer readable program code implementing the method of claim 1. Appellants do not persuasively rebut the Examiner's finding that the claims are directed to an abstract idea and lack the necessary indicia for patent eligibility. App. Br. 9, Ans. 10.

The Supreme Court in *Alice Corp. v. CLS Bank Int'l*, 134 S.Ct. 2347 (2014) reiterated the framework set out in *Mayo Collaborative Servs. v. Prometheus Labs Inc.*, 132 S.Ct. 1289 (2012) for "distinguishing patents that claim ... abstract ideas from those that claim patent-eligible applications from those concepts." *Alice*, 134 S.Ct. at 2355. The first step in the analysis is to determine if the claim is directed toward a patent-ineligible concept and, if so, the second step is to determine whether there are additional elements that transform the nature of the claim into a patent eligible application. The second step searches for an inventive concept that is sufficient to ensure that the patent amounts to significantly more than a patent on the patent-ineligible concept.

Applying the first step, we find that claim 1 is directed to a mathematical method for producing a mathematical based graph. Each step involves the use of mathematics and/or algorithms. Accordingly, we find that the claim is directed to a patent-ineligible concept.

Having determined that the claim is directed to a patent-ineligible concept, step 2 of the analysis considers whether the claim contains an inventive concept such as additional limitations that narrow, confine or otherwise tie down the claim so that it does not fully cover the abstract idea itself. *See Alice*, 134 S.Ct. at 2357. The preamble of the claim includes features such as computer-based method, processor, computer storage medium, but these features are not set forth in the method steps. Moreover, these features are the type of generic element that has been determined to be insufficient by the Supreme Court to transform a patent-ineligible claim into one that is patent-eligible. *See Alice*, 134 S.Ct. at 2358. The claim includes no limitations that prevent it from covering the abstract idea itself.

In view of the above, even assuming *arguendo*, that that the features in the preamble argued by Appellants to render the claims patent-eligible should be considered as limitations, we are unpersuaded by Appellants' argument that that the claims constitute an inventive concept that is significantly more than a patent on the patent-ineligible concept.

Accordingly, we sustain the 35 U.S.C. § 101 rejection of claim 1. We also sustain the rejection of dependent claims 2–14 as these claims were not separately argued.

Independent claim 15 is directed to an article of manufacture with similar limitations as claim 1 and its rejection is sustained for the same reason as discussed above. We also sustain the rejection of dependent claims 16–25, as these claims were not separately argued.

DECISION

The Examiner's decision rejecting claims 1–25 under 35 U.S.C. § 112, first paragraph, is affirmed.

The Examiner's decision rejecting claims 1–14 under 35 U.S.C. § 112, second paragraph, is affirmed.

The Examiner's decision rejecting claims 15–25 under 35 U.S.C. § 112, second paragraph, is reversed.

The Examiner's decision rejecting claims 1–25 under 35 U.S.C. § 101 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a) (1)(iv).

AFFIRMED-IN-PART

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