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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* BURCU AYDIN and MICHAEL TAMIR  
(Applicant: Sears Brands, LLC)

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Appeal 2017-010250  
Application 14/083,815  
Technology Center 3600

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Before TERRENCE W. McMILLIN, KARA L. SZPONDOWSKI, and  
SCOTT B. HOWARD, *Administrative Patent Judges*.

SZPONDOWSKI, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C § 134(a) of the Examiner's Final Rejection of claims 1–5, 8–11, 14–17, and 20–23, which constitute all claims currently pending in the application. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

## STATEMENT OF THE CASE

Appellants' invention relates to "electronic commerce (e-commerce), and more particularly, to classifying customers in an e-commerce environment." Spec. ¶ 1. Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. A computer-implemented method, comprising:
  - collecting purchase history data for a plurality of customers;
  - collecting demographic data for the plurality of customers;
  - splitting the plurality of customers into a first customer group comprising customers who have purchase transactions, within a time period of interest, greater than a predetermined number of purchase transactions and a second customer group comprising customers who have purchase transactions, within the time period of interest, not greater than the predetermined number of purchase transactions;
  - generating, based on the purchase history data of the first customer group, a matrix that relates a customer to purchased products to obtain a transaction space for the first customer group;
  - applying principal component analysis to the matrix to obtain a reduced matrix having a reduced transaction space for the first customer group;
  - generating in accordance with a clustering large applications (CLARA) a plurality of sample sets of the reduced matrix;
  - applying a partitioning around medoids (PAM) clustering algorithm to each of the plurality of sample sets to obtain a plurality of medoid sets comprising a medoid set per sample set;
  - clustering customers of the first customer group into a plurality of clusters based upon a medoid set of the plurality of medoid sets;

placing each customer of the second customer group into a cluster of the plurality of clusters that comprises a plurality of customers from the first customer group based on the collected demographic data for the customer and the collected demographic data for the plurality of customers from the first customer group placed in the respective cluster; and

tailoring services provided to a customer based on the cluster in which the customer resides.

### REJECTION

Claims 1–5, 8–11, 14–17, and 20–23 stand rejected under 35 U.S.C. § 101 because the claimed invention is directed to a judicial exception without significantly more. Final Act. 2.

### ANALYSIS

To determine whether a claim is eligible under 35 U.S.C. § 101, “[w]e must first determine whether the claims at issue are directed to a patent-ineligible concept.” *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2355 (2014). “[T]he claims are considered in their entirety to ascertain whether their character as a whole is directed to excluded subject matter.” *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1346 (Fed. Cir. 2015). “If the claims are not directed to an abstract idea [or other patent-ineligible concept], the inquiry ends. If the claims are ‘directed to’ an abstract idea, then the inquiry proceeds to the second step of the *Alice* framework.” *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299, 1312 (Fed. Cir. 2016).

In the second step, we “consider the elements of each claim both individually and ‘as an ordered combination’ to determine whether the

additional elements ‘transform the nature of the claim’ into a patent-eligible application.” *Alice*, 134 S. Ct. at 2355 (quoting *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, 566 U.S. 66, 78–79 (2012)). In other words, the second step is to “search for an ‘inventive concept’ – *i.e.*, an element or combination of elements that is ‘sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.’” *Id.* (alteration in original) (quoting *Mayo*, 566 U.S. at 72–73).

The Examiner determines the claimed invention is directed to the abstract idea of placing customers in a cluster based on demographic data in order to tailor services, which is an idea of itself, mathematical relationships/formulas, and a fundamental economic practice. Final Act. 2–3, 5; Ans. 3–6. The Examiner determines the claims are similar to the claims in *SmartGene* because they “compare[] the demographic data of a plurality of customers in the second group to demographic data of a plurality of customers in the first group and us[e] rules to determine a cluster in which a customer resides in order to target services.” Final Act. 4 (citing *SmartGene, Inc. v. Advanced Biological Labs., SA*, 555 F. App’x 950 (Fed. Cir. 2014)). The Examiner further determines the claimed invention is “directed towards the abstract idea of using mathematical correlations in placing customers in a cluster based on demographic data in order to tailor services” and that “the claimed invention here can be performed in the human mind or by a human using pen and paper.” Ans. 6 (emphases omitted). According to the Examiner, the claimed invention is also directed to the “abstract idea of collecting information, analyzing it and displaying certain results of the collection and analysis,” and more specifically to

“collecting and analyzing demographic data to detect a cluster a customer belongs in order to tailor services provided to a customer based on the cluster in which the customer resides.” Ans. 6; *see also Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350 (Fed. Cir. 2016); *FairWarning IP, LLC v. Iatric Sys., Inc.*, 839 F.3d 1089, 1098 (Fed. Cir. 2016).

The Examiner further finds the additional claim elements do not amount to significantly more than the abstract idea. Final Act. 4–6. Specifically, the Examiner determines the claimed invention, unlike in *DDR*, is not necessarily rooted in computer technology to overcome a problem specifically arising in the realm of computer networks. Final Act. 4; *see also DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245 (Fed. Cir. 2014). According to the Examiner, unlike in *Enfish* “in which the claimed invention achieved other benefits over conventional databases . . . that improved the functioning of the computer, here the claimed invention amount(s) to no more than . . . recitation of generic computer structure that serves to perform generic computer functions recited at a high level of generality.” Ans. 4 (emphasis omitted); *see also Enfish LLC v. Microsoft Corp.*, 822 F.3d 1327 (Fed. Cir. 2016).

Appellants argue the claimed invention is “directed to a particular embodiment or implementation that overcomes a technical problem.” App. Br. 15 (citing *Enfish*, 822 F.3d 1327). Appellants argue the claimed invention “is not only directed to clustering customers, but is also directed to a particular clustering process that provides a solution to a technical problem, namely reducing the memory storage required by the clustering process.” App. Br. 17. According to Appellants, the “process set forth in the claims . . . results in smaller memory requirements,” which, like in

*Enfish*, are “technological improvements [that] were deemed to flow from the structures set forth in the claims.” Reply Br. 7–8 (citing *Enfish*, 822 F.3d 1327).

We agree with Appellants that the present claimed invention is more similar to the patent-eligible claims in *Enfish* than to the claims in the various cases cited by the Examiner. See Ans. 3–7. At step one of the *Alice* analysis, “it is not enough to merely identify a patent-ineligible concept underlying the claim; we must determine whether that patent-ineligible concept is what the claim is ‘directed to.’” *Rapid Litigation Management Ltd. v. CellzDirect, Inc.*, 827 F.3d 1042, 1050 (Fed. Cir. 2016). We analyze “whether the focus of the claims is on the specific asserted improvement in computer capabilities . . . or, instead, on a process that qualifies as an ‘abstract idea’ for which computers are invoked merely as a tool.” *Enfish*, 822 F.3d at 1335–36.

“Software can make non-abstract improvements to computer technology.” *Enfish*, 822 F.3d at 1335. In *Enfish*, the Federal Circuit highlighted “that the improvement is not defined by reference to ‘physical’ components does not doom the claims,” because “improvements to software that, by their very nature, may not be defined by particular physical features but rather by logical structures and processes.” *Enfish*, 822 F.3d at 1339. The Federal Circuit found that the “self-referential table recited in the claims on appeal is a specific type of data structure designed to improve the way a computer stores and retrieves data in memory.” *Id.*

As Appellants point out, (App. Br. 16, 22), Appellants’ Specification describes that the “PAM clustering algorithm may be preferable to other clustering algorithms,” but that “for very large data sets, the memory

requirements of the PAM clustering algorithm may become prohibitive,” and “[t]o overcome the potential memory requirement issue, the classifier 33 further utilizes the CLARA clustering algorithm” such that each resulting sample “is of a size that the PAM clustering algorithm can handle with reasonable memory requirements.” Spec. ¶ 51. In other words, Appellants’ Specification identifies a technical problem (i.e., prohibitive memory requirement issues using the preferable PAM clustering algorithm) as well as the claimed solution (i.e., resolve memory requirement issues with reasonable memory requirements by combining the CLARA clustering algorithm and the PAM clustering algorithm).

Here, like in *Enfish*, the claimed invention, in light of Appellants’ Specification, is focused on “an improvement to computer functionality itself, not on economic or other tasks for which a computer is used in its ordinary capacity.” *Enfish*, 822 F.3d at 1336. Specifically, the present claimed invention is directed to utilizing both the CLARA clustering algorithm and the PAM clustering algorithm (i.e., specific improvement in operation) in order to reduce the clustering memory requirements from prohibitive to reasonable (i.e., operation of the computer itself). *See* Spec. ¶ 51. In other words, “the claims are directed to a specific implementation of a solution to a problem in the software arts.” *Enfish*, 822 F.3d at 1339.

Therefore, Appellants have persuasively established that the claimed invention is directed to a specific improvement in the operation of the computer itself and is not abstract.

Accordingly, we do not sustain the Examiner’s 35 U.S.C. § 101 rejection of claims 1–5, 8–11, 14–17, and 20–23.

Appeal 2017-010250  
Application 14/083,815

DECISION

The Examiner's 35 U.S.C. § 101 rejection of claims 1–5, 8–11, 14–17, and 20–23 is reversed.

REVERSED