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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte SRINIVASAN VAIRAVAN,
CAITLYN CHIOFOLO, NICOLAS CHBAT, and
MONICA GHOSH[1]

Appeal 2018-000775
Application 14/379,376
Technology Center 1600

Before DEBORAH KATZ, JOHN G. NEW, and JOHN E. SCHNEIDER, *Administrative Patent Judges.*

NEW, *Administrative Patent Judge*.

DECISION ON APPEAL

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[1] Appellants identify Koninklijke Philips N.V., as the real party in interest. App. Br. 2.

SUMMARY

Appellants file this appeal under 35 U.S.C. § 134(a) from the Examiner's Final Rejection of claims 1, 4, 9–11, 13, 14, 16–18, 20, 23 and 32–35 as unpatentable under 35 U.S.C. § 101 as being directed to nonstatutory subject matter.

We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

NATURE OF THE CLAIMED INVENTION

Appellants' invention is directed to improved apparatus and methods for monitoring acute lung injury ("ALI"). Spec. 1.

REPRESENTATIVE CLAIM

Claim 1 is representative of the claims on appeal and recites:

> 1. (Previously presented) A non-transitory storage medium storing instructions executable by an electronic data processing device including a display to monitor a patient for acute lung injury (ALI) by operations including:
>
> (i) receiving a data stream of values for each of a plurality of physiological parameters for the patient, the data stream of values according to a plurality of discrete time intervals and produced by a monitor monitoring the patient;
>
> (ii) receiving drug administration information pertaining to administration of one or more drugs over time to the patient;
>
> (iii) computing ALI indicator values over time based at least on the received values of the plurality of physiological parameters for the patient and the received drug administration information, wherein computing the ALI indicator values

> includes computing a Lempel-Ziv complexity metric for values of each received data stream of each physiological parameter of the plurality of physiological parameters which include heart rate (HR), systolic blood pressure (SBP), diastolic blood pressure (DBP), and respiration rate (RR), and for the each received drug of the one or more drugs for the patient, and computing an aggregation of the Lempel-Ziv complexity metrics, each ALI indicator value being based on the aggregation of the Lempel-Ziv complexity metrics; and
>
> (iv) displaying a representation of the computed ALI indicator values as a function of time on the display.

App. Br. 9.

ISSUES AND ANALYSES

We adopt the Examiner's findings, reasoning, and conclusion that the claims are directed to nonstatutory subject matter. We address the arguments raised by Appellants below.

Issue

Appellants argue the Examiner erred in concluding that the claims are drawn to a judicial exception to 35 U.S.C. § 101, i.e., an abstract idea, without adding significantly more. App. Br. 4.

Analysis

Appellants argue all of the claims together. App. Br. 4. Appellants argue that, contrary to the Examiner's conclusion, the claims on appeal are distinguishable from those of *In re Grams*, 888 F.2d 835 (Fed. Cir. 1989). *Id.* According to Appellants, the claims in *Grams* were directed to: "a method of testing a complex system to determine whether the system

condition is normal or abnormal and, if it is abnormal, to determine the cause of the abnormality." *Id.* at 5 (citing Grams, 888 F.2d at 836–37). In contrast, Appellants argue, the claims on appeal are directed to monitoring for a specific condition, which is Acute Lung Injury ("ALI"), using an improved monitoring of patients, and employing a specific algorithm, i.e., aggregated Lempel-Zev complexity metrics. *Id.*

Appellants argue that their claimed invention improves upon an existing process and, as such, delivers a more meaningful result. App. Br. 5. Furthermore, Appellants assert, the ALI-directed claims relate to a specific condition and, unlike the situation in *In re Grams*, and do not "tie-up" or preempt the medical condition. *Id.* Furthermore, Appellants contend, the claims recite specific algorithms and not generally "different combinations" recited by *In re Grams*. *Id.*

Appellants also dispute as misguided the Examiner's reliance on *Parker v. Flook*, 437 U.S. 584 (1978). Appellants point to *In re Abele*, 684 F.2d 902 (C.C.P.A. 1982), as noting that *Flook* holds that: "[t]he patent application did not 'explain how to select … any of the variables' used in the algorithm and [thus], no process other than the algorithm was present." App. Br. 5 (citing *Abele* 684 F.2d at 907 (quoting *Flook*, 437 U.S. at 586)). In contrast, Appellants argue, the claims on appeal recite the various physiological parameters or variables in the Lempel-Ziv complexity metric. *Id.* By way of example, Appellants point to claim 1, which recites physiological parameters including heart rate, systolic blood pressure, diastolic blood pressure, and respiration rate. *Id.* Appellants therefore argue that the claims on appeal are thus distinguishable from *Flook*. *Id.*

Appellants also point to claim 5 of *Abele*, which was directed to: "[a] method displaying data in a field," which the court found to be patent-ineligible, in contrast to its dependent claim 6, "wherein said data is X-ray attenuation data produced in a two dimensional field by a computed tomography scanner." App. Br. 6. Appellants note that the court in *Abele* held that: "[w]ere we to view the claim absent the algorithm, the production, detection and display steps would still be present and would result in a conventional CAT-scan process." *Id.* (quoting *Abele*, 684 F.2d at 908). Appellants further note that the *Abele* court also states that: "[t]he algorithm, when properly viewed, is merely applied to the 'attenuation data' to eliminate what would otherwise appear as artifacts upon display of the data in the manner claimed." *Id.* (quoting *Abele*, 684 F.2d at 908–09).

Similarly, Appellants argue, the algorithm of claim 1 on appeal is the Lempel-Ziv complexity metric. App. Br. 6. According to Appellants, the data recited in claim 1 includes a data stream of values for each of a plurality of physiological parameters for the patient, the data stream of values according to a plurality of discrete time intervals and produced by a monitor monitoring the patient. *Id.* Appellants assert that the monitor monitoring the patient is analogous the CT scanner of Abele, and that the physiological data is analogous to the "x-ray attenuation data" of Abele. *Id.*

Appellants contend that, in *Abele*, the improvement was data displayed in a field, which, as interpreted by the court, eliminates artifacts in the displayed data. App. Br. 7. Likewise, Appellants argue, claim 1 recites an improvement in "a display to monitor a patient for acute lung injury (ALI) by operations." *Id.* Consequently, Appellants argue, the

claims recite an improved product of a better display to monitor a patient for ALI by operations, and as in *Abele*, are patent-eligible subject matter.

In performing an analysis of patentability under 35 U.S.C. § 101, we follow the framework set forth by the Supreme Court in *Mayo Collaborative Servcs. v. Prometheus Labs. Inc.*, 566 U.S. 66, 71 (2012). As a first step, we determine whether the claims at issue are directed to a patent-ineligible concept, i.e., a law of nature, a phenomenon of nature, or an abstract idea. *Mayo*, 566 U.S. at 70–71. If the claims are so directed, we next consider the elements of each claim both individually and "as an ordered combination" to determine whether additional elements "transform the nature of the claim" into a patent-eligible application. *Id.* at 78–79; *see also Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1375 (Fed. Cir. 2015). Specifically, the Supreme Court considered this second step as determining whether the claims recite 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." *Mayo*, 566 U.S. at 72–73.

The Examiner has concluded that Appellants' claims are directed to a patent-ineligible exception to Section 101, *viz.*, an algorithm for calculating parameters indicating an abnormal condition, which is an abstract idea. *See* Final Act. 4. The Supreme Court "has not established a definitive rule to determine what constitutes an 'abstract idea.'" *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1334 (Fed. Cir. 2016) (citing *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct 2347, 2357 (2014)). However, our reviewing court has held that information, as such, is intangible and the collecting of information, including when limited to particular content (which does not change its character as information), is within the realm of abstract ideas.

See Elec. Power Grp., LLC v. Alstom S.A., 830 F.3d 1350, 1353–54 (Fed. Cir. 2016) (collecting cases); *see also Grams*, 888 F.2d at 840 (Fed. Cir. 1989) ("The presence of a physical step in the claim [i.e., performing clinical tests on individuals] to derive data for the algorithm will not render the claim statutory"). The Federal Circuit has similarly treated the analyzing of information by steps that a person is capable of performing mentally, or via mathematical algorithms, without more, as essentially mental processes falling within the abstract idea category. *Elec. Power Grp.*, 830 F.3d at 1353–54. Furthermore, the court has held that the mere presentation of the results of abstract processes of collecting and analyzing information, without more, is abstract, as an ancillary part of such collection and analysis. *Id.*

Appellants' claims are directed to a series of steps by which information concerning ALI is analyzed via a series of processing steps: (1) receiving patient physiological data and drug administration information over time; (2) computing the ALI indicator values, including computing a Lempel-Ziv complexity metric for each physiological parameter and for the each received drug, and computing an aggregation of the Lempel-Ziv complexity metrics; and (3) displaying a representation of the computed ALI indicator values as a function of time on the display. We agree with the Examiner that all of these steps are directed to an abstract idea: they amount no more than the receiving, manipulation, and display of data following the steps of an algorithmic function. These information management and analysis steps could be carried out in the human mind, or with the aid of pencil and paper, and therefore are directed to a patent-ineligible abstract idea. *See, e.g., CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366 (2011).

We therefore turn to the second portion of the *Mayo* test to inquire whether the claims add "significantly more" than the abstract idea itself. We conclude that they do not. As we have noted above, the claims are directed to no more than routine data collection and a series of computational steps using an algorithm, subsequent to which the data is displayed. There are no additional steps adding significantly more than the recited abstract computational process steps. *Elec. Power Grp.*, 830 F.3d at 1353–54.

Furthermore, Appellants' Specification discloses that no special processor is required to perform the algorithmic steps recited in the claims:

> The patient monitor **10** is an "intelligent" monitor in that it includes or is operatively connected with data processing capability provided by a microprocessor, microcontroller, or the like connected with suitable memory and other ancillary electronics (details not illustrated). In some embodiments the patient monitor **10** includes internal data processing capability in the form of a built-in computer, microprocessor, or so forth, such that the patient monitor can perform autonomous processing of monitored patient data. In other embodiments the patient monitor is a "dumb terminal" that is connected with a server or other computer or data processing device that performs the processing of patient data. It is also contemplated for a portion of the data processing capability to be distributed amongst intercommunicating body-worn sensors or devices mounted on the patient **8**, e.g.[,] in the form of a Medical Body Area Network (MBAN).

Spec. 4. As such, Appellants' claims do not recite a specific improvement to the way computers operate, but merely the use of standard processors and software. *See Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1334 (Fed. Cir. 2016).

Nor are we persuaded by Appellants' reliance upon *Abele*. In *Abele*, the court distinguished between claim 5, which the court found was directed solely to the mathematical algorithm portion of Appellants' invention, and claim 6, which required collecting attenuation data available only when an X-ray beam is produced by a CAT scanner, passed through an object, and detected upon its exit. *Abele*, 684 F.2d at 908. According to the court, absent the algorithm, the production, detection and display steps of claim 6 would still be present and would result in a conventional CAT-scan process. *Id.* Therefore, the court held, production and detection cannot be considered mere antecedent steps to obtain values for solving the algorithm. *Id.*

In contrast, the claims on appeal recite "receiving a data stream of values for each of a plurality of physiological parameters" and receiving "drug administration information" prior to the algorithmic processing. We distinguish this from claim 6 of *Abele*, because the claims do not recite any steps *prior* to receiving the data stream and applying the algorithm. Put more simply, when the application of the algorithmic steps to the received data, and displaying that data by conventional means, is stripped from the claim, no patent-eligible composition or process limitations remain.

We consequently conclude, with respect to the second part of our analysis, that the limitations, taken individually and as a whole, do not add "significantly more" to the claims than the recited abstract idea. We therefore affirm the Examiner's rejection of the claims as patent ineligible as being directed to nonstatutory subject matter.

DECISION

The Examiner's rejection of claims 1, 4, 9–11, 13, 14, 16–18, 20, 23 and 32–35 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)(1)(iv).

AFFIRMED