NOTE: This disposition is nonprecedential.

United States Court of Appeals for the Federal Circuit

IN RE: SURESH GOPALAN,
Appellant

2019-2070

Appeal from the United States Patent and Trademark Office, Patent Trial and Appeal Board in No. 13/926,096.

Decided: April 13, 2020

SURESH GOPALAN, Cambridge, MA, pro se.

MOLLY R. SILFEN, Office of the Solicitor, United States Patent and Trademark Office, Alexandria, VA, for appellee Andrei Iancu. Also represented by THOMAS W. KRAUSE, AMY J. NELSON, FARHEENA YASMEEN RASHEED.

Before MOORE, CLEVENGER, and CHEN, *Circuit Judges.*

CHEN, *Circuit Judge.*

Suresh Gopalan seeks review of a Patent Trial and Appeal Board (Board) decision affirming the examiner's rejection of all pending claims of his U.S. Patent Application No. 13/926,096 (the '096 Application) under 35 U.S.C. § 101. *See Ex Parte Suresh Gopalan*, No. 2018–003363, 2019 WL

764513 (P.T.A.B. Jan. 31, 2019). Because we agree with the Board that the claims are directed to an ineligible abstract idea, we *affirm*.

BACKGROUND

In June 2013, Mr. Gopalan filed the '096 Application, which is generally directed to methods and systems for designing measurement strategies. J.A. 58–127. The specification theorizes that the number of independent measures to be taken of a parameter of interest might be optimized for the number of true positives and false positives detected in the resulting data set. J.A. 64. In the context of measuring spectral signals, such as from fluorescent probes for detecting gene transcripts, the specification explains that these independent measurements can be made at different parts of an emission spectrum. J.A. 63.

The '096 Application's claims purport to provide a method for designing a measurement strategy that starts with a data set, applies an undefined optimization technique "resulting" in an optimal combination of true positives and false positives, and outputs the optimal number of measurements. Claim 1 is representative:

> 1. A computer implemented method for-devising spectrally based measurements, wherein a signal is measured at different point along a spectrum, the method comprising the steps of:
>
> > [1] selecting a number of measurements along the spectrum, constituting at least one data set;
> >
> > [2] selecting a metric for determining substantially optimal combination of true positives and false positives in said at least one data set;
> >
> > [3] applying an optimization technique; and

[4] obtaining, from the results of the optimization technique, a value for at least one optimization parameter, said value for at least one optimization parameter resulting in substantially optimal combination of true positives and false positives; wherein the obtaining at least one optimization parameter comprises obtaining a value of a number of independent measures; wherein obtaining a value of a number of independent measures comprises obtaining at least one combination of a value of a number of independent measures and a value for a confidence measure; said independent measures comprising measures of a parameter of spectral property being measured obtained using different measurement criteria;

[5] implementing a measurement strategy by placement of sensors or design of components that allow design of measurement by sensors to implement the number of independent measures; wherein the measurement strategy for the spectrally based measurements results from the number of independent measures;

[6] wherein a number of true positives and false positives are a function of at least one combination of the number of independent measures and the confidence measure; and

[7] wherein the steps of selecting a metric, applying an optimization technique, and obtaining, from the results of the optimization technique, a value are performed by means of a non-transitory computer usable medium having computer readable code

> that causes a processor to perform the steps;
>
> [8] whereby such measurement are used in systems used in applications including nucleic acid sequencing, high spatial density measurement of spectrally based measurement, including fluorescence, based signals using scanners and cameras including for nucleic acid and protein measurements.

'096 Application at claim 1 (numbering added).

The preamble of claim 1 reveals that the claimed method is a design strategy for "spectrally based measurements." The measurement strategy begins with [1] selecting a number of measurements along a spectrum that constitutes at least one data set. Then the claim recites [2] selecting a metric for the purpose and desired result of obtaining a substantially optimal combination of true positives and false positives in the data set. But the claims are not limited to any specific "metric," nor do they specify any metric's use to achieve the desired result.

The claim next recites [3] applying an optimization technique, which is [7] performed on a generic computer, and [4] obtaining the desired result of the optimization technique, i.e., a value for at least one optimization parameter "resulting in substantially optimal combination of true positives and false positives." The claim states that obtaining this value for the optimization parameter includes obtaining a value of a number of independent measures, which, in turn, includes obtaining a combination of a value of independent measures and a value for a confidence measure. According to the claim, [6] "a number of true positives and false positives are a function of at least one combination of the number of independent measures and the confidence measure." None of these variables—the metric, the optimization technique, the value for the optimization parameter, the value of the number of independent

measures, or the value for the confidence measure—are defined in the claims. The claims do not specify the use of these variables, but instead merely claim the desired result of optimizing the number of true positives and false positives.

The claim then recites [5] implementing the measurement strategy based on the value of the number of independent measures by placing sensors or design components. But neither the claims nor specification contain any concrete specificity regarding the placement or design of the sensors or components. The final limitation does not meaningfully limit the claim, as it recites [8] using the measurement strategy in applications optionally including nucleic acid sequencing and high spatial density measurement of spectrally based measurement.

The examiner rejected all pending claims under § 101 as being directed to the abstract ideas of collecting and organizing data and the mathematical concept of optimization. J.A. 601–03. Proceeding to step two of *Alice*, the examiner found that the claim elements do not provide any "inventive concept" that transforms the abstract idea into a patent-eligible application; rather, the claims require no more than the performance of generic functions that were well-understood, routine, and conventional. J.A. 603, 607–08.

Mr. Gopalan appealed the examiner's rejection to the Board. The Board affirmed the examiner's § 101 rejection in an initial decision on appeal in January 2019 and a subsequent rehearing decision in May 2019. *Gopalan*, 2019 WL 764513, at *14; J.A. 26–33. Mr. Gopalan appeals the Board's decision. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(4)(A).

DISCUSSION

Patent eligibility under 35 U.S.C. § 101 is a question of law that may contain underlying issues of fact. *Interval*

Licensing LLC v. AOL, Inc., 896 F.3d 1335, 1342 (Fed. Cir. 2018) (citing *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1365 (Fed. Cir. 2018)). We review an ultimate conclusion on patent eligibility *de novo*. *See id.*

Section 101 allows inventors to obtain patents on "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof." § 101. However, "this provision contains an important implicit exception": an inventor may not patent laws of nature, natural phenomena, or abstract ideas. *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 573 U.S. 208, 216 (2014). To assess whether a patent claim violates this exception to the terms of § 101, the Supreme Court has set forth a two-step framework, in which a court determines: (1) whether the claim is "directed to a patent-ineligible concept," i.e., a law of nature, natural phenomenon, or abstract idea, and, if so, (2) whether the elements of the claim, considered "both individually and 'as an ordered combination,'" add enough to "'transform the nature of the claim' into a patent-eligible application." *Id.* at 217 (quoting *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 78 (2012)).

A. *Alice* Step 1: Abstract Idea

Reading the claims in light of the specification, the Board agreed with the examiner that the claims at issue "are directed to the abstract idea of using algorithms or mathematical relationships to devise a measurement strategy for spectrally based measurements." *Gopalan*, 2019 WL 764513, at *9. As the Board explained, this court has held that claims focused on analyzing information using mathematical algorithms are directed to an abstract idea. *Id.* at *10; *see*, *e.g.*, *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1354 (Fed. Cir. 2016) (finding claims directed to an abstract idea because "[t]he advance they purport to make is a process of gathering and analyzing information of a specified content, then displaying the

results, and not any particular assertedly inventive technology for performing those functions"); *SAP Am., Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1167 (Fed. Cir. 2018) (finding claims "focused . . . on selecting certain information, analyzing it using mathematical techniques, and reporting or displaying the results of the analysis" are directed to an abstract idea).

Mr. Gopalan argues that his claimed invention results in optimizing "the number of true positives and false positives . . . such as to avoid or reduce the effect of stray signals" "in spectrally based measurements," which he claims is a "novel and useful result obtained with the help of optimization." Appellant's Br. at 12, 14, 22. But, as the Board correctly found, the claims are recited at a "high level of generality [that] does not limit the claims to rules with specific characteristics." *Gopalan*, 2019 WL 764513, at *13 (explaining that "[a]lthough mathematical relationships and algorithms are implicated in the recitations of [the independent] claims, these claims do not actually recite any particular rules").

The claims only generically recite "a metric," "an optimization technique," an "optimization parameter," "a value of a number of independent measures," and "a value for a confidence measure." None of these variables are defined, and the claims do not concretely limit these variables such that the claims do not merely claim the result of obtaining a "substantially optimal combination of true positives and false positives" in the data set.

Thus, the claims do not "embody a concrete solution to a problem" because they lack "the specificity required to transform a claim from one claiming only a result to one claiming a way of achieving it." *Interval Licensing*, 896 F.3d at 1343 (citing *SAP Am., Inc. v. InvestPic, LLC*, 890 F.3d 1016, 1021–22 (Fed. Cir. 2018) (collecting cases)). Indeed, the claims provide result-oriented limitations like others we have held to be directed to abstract ideas. *See*

Elec. Power Grp., 830 F.3d at 1356 ("Indeed, the essentially result-focused, functional character of claim language has been a frequent feature of claims held ineligible under § 101, especially in the area of using generic computer and network technology to carry out economic transactions."); *Interval Licensing*, 896 F.3d at 1345 (finding claim directed to "non-interfering display of two information sets, without any limitation on how to produce that result" to be ineligible).

B. *Alice* Step 2: Inventive Concept

Nor do the claims recite any transformative inventive concept. We agree with the Board "that the additional elements of [the independent] claims . . . , both individually and as an ordered combination, do not integrate . . . [the] abstract concepts, into a practical application." *Gopalan*, 2019 WL 764513, at *11. The Board also correctly reasoned that performing the steps of the optimization technique "on a generic processor does not transform it into a patentable apparatus." *Id.* at *12.

Further, the limitation "implementing a measurement strategy [based on the number of independent measures] by placement of sensors or design components" is recited at "a high level of generality" with no details concerning how the sensors or components are placed or their design, as the Board explained. *Id.* at *11; J.A. 32. Indeed, the specification does not recite any particular sensor placement or design, only generally stating that the specification's "teachings can be applied . . . us[ing] offset measures of sensor based measurements" through "placement of sensors or design aberrations." J.A. 64 ¶33. And Gopalan concedes that implementing the measurement strategy was well-known, because "anyone of skill in the art" would have known how to place the sensors to make the appropriate measurements once the measurement strategy was designed. Appellant's Br. at 8, 19.

CONCLUSION

We have considered Mr. Gopalan's remaining arguments and find them unpersuasive. For the foregoing reasons, we conclude that the claims are ineligible under § 101 and *affirm* the decision of the Board.

AFFIRMED

COSTS

No costs.