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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte LILLA BOROCZKY, LALITHA AGNIHOTRI, LUYIN ZHAO,
and MICHAEL CHUN-CHIEH LEE

Appeal 2018-005795
Application 12/747,615
Technology Center 2100

Before ALLEN R. MACDONALD, JOHN A. JEFFERY, and TERRENCE
W. MCMILLIN, *Administrative Patent Judges*.

MCMILLIN, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant appeals from the Examiner's decision to reject claims 1, 2, 8, and 10–16, which constitute all of the claims pending in this application.¹ We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

¹ We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as Koninklijke Philips N.V. Appeal Br. 1.

INTRODUCTION

Appellant's Specification describes the invention as relating to "a method and apparatus of hierarchical searching for case-based decision support in medical applications." Spec. 1.² As background, Appellant's Specification provides:

Research has demonstrated the potential of case-based systems for computer-aided diagnosis (CADx) and computer-aided therapy management (CATM) to aid physicians in improving diagnosis and therapy. By retrieving cases in an inductive manner similar to the cognitive processes employed by experienced physicians, such systems are a natural fit for use in clinical circumstances. Therefore, case-based CADx systems will help physicians improve their diagnostic accuracy and reduce both unnecessary interventions and delays in treatment. In the CATM field, case-based systems could improve patient outcome and shorten treatment time by applying better treatment planning based on past similar cases.

Spec. 1. The Abstract of the Specification states:

The invention relates to search for cases in a database. According to the proposed method and apparatus, similarity matching is performed between an input case and a set of cases in an initial search to receive similar cases by using a given matching criterion. Then statistics on image and/or non-image-based features associated with the similar cases are calculated and presented to the user with the similar cases. In a search refinement the similar cases are refined by additional features that are determined by the user based on the statistics. The search refinement can be iterative depending on the user's need.

² We refer to the Specification filed June 6, 2010 ("Spec."); the Final Office Action mailed Sept. 1, 2017 ("Final Act."); the Appeal Brief filed Jan. 26, 2018 ("Appeal Br."); the Examiner's Answer mailed Apr. 2, 2018 ("Ans."); and the Reply Brief filed May 17, 2018 ("Reply").

CLAIMED SUBJECT MATTER

Claim 1, reproduced below, is illustrative of the claimed subject matter (emphasis and formatting added):

1. A method of searching cases in a database, said method comprising:

a first step of performing similarity matching between an input case and cases in the database by using a first matching criterion that includes at least one image-based feature to identify a set of cases similar to said input case, the at least one image-based feature including at least one of shape of a tumor in an image, texture of the tumor, and size change of the tumor, the cases in the database including a plurality of images classified according to different imaging modalities, the first step of similarity matching between an input case and cases in the database being performed for each imaging modality to identify a plurality of respective sets of similar cases by using said first matching criterion;

calculating statistics on features associated with the set of similar cases, wherein the statistics describe non-image-based clinical information;

presenting the set of similar cases and the statistics to a user;

receiving a user input including a second matching criterion that includes at least one non-image-based feature that is derived from clinical information and based on said statistics, the clinical information including at least one of relevant previous or current diseases, lifestyle facts, genetic profiles, family medical history, a physician's particular knowledge and information of a patient to be diagnosed or treated, weight, allergies, and vital statistics;

a second step of performing similarity matching between the input case and the set of similar cases by using said second matching criterion; and

display the set of similar cases;

wherein the features associated with the set of similar cases are at least one of image-based features and non-image based features; and

wherein the user input further comprises a numerical value given to each feature in the criterion, and the second step of performing similarity matching includes calculating a similarity metric by using the numerical values; and

wherein the steps of performing similarity matching include calculating a similarity value for each case to be compared, for indicating the degree of similarity between the input case and the case to be compared, the similarity value being a weighted combination of a Euclidean distance and Mahalanobis distance.

REFERENCES

The prior art relied upon by the Examiner is:

Name	Reference	Date
Zhou II	US2005/0210015 A1	Sept. 22, 2005
Zhou I	US 2006/0034508 A1	Feb. 16, 2006
Nakamura	US 2006/0189843 A1	Aug. 24, 2006
Yoshii	US 2006/0241978 A1	Oct. 26, 2006
Castelli	US 7,272,593 B1	Sept. 18, 2007
Zahlmann	US 7,860,287 B2	Dec. 28, 2010

REJECTIONS³

A.

The Examiner rejects claims 1, 2, 8, and 10–16 under 35 U.S.C. § 101 because “the claimed invention is directed to a judicial exception (i.e., a law of nature, a natural phenomenon, or an abstract idea) without significantly more” i.e., the claimed invention is directed to patent-ineligible subject matter. Final Act. 5.

³ The Examiner’s statement of rejection includes claim 17, which has been canceled. *See* Final Act. 5. We find this to be a harmless typographical error.

We select claim 1 as representative. *See* 37 C.F.R. § 41.37(c)(1)(iv). Except for an argument that dependent claims by their nature add “something more,” which we address below, Appellant does not separately argue claims 2, 8, and 10–16.

B.

The Examiner rejects claims 1, 2, 8, and 10 under 35 U.S.C. § 103(a) as being unpatentable over Castelli, Zahlmann, Nakamura, Yoshii, Zhou I, and Zhou II. Final Act. 10.

We select independent claim 1 as representative. Appellant does not present separate arguments regarding claims 2, 8, and 10. Except for our ultimate decision, we do not discuss the 35 U.S.C. § 103(a) rejection of claims 2, 8, and 10 further herein.

C.

The Examiner rejects claims 11–16 under 35 U.S.C. § 103(a) as being unpatentable over Castelli and Zahlmann. Final Act. 17.

We select independent claims 11 and 16 as representative. Appellant does not present separate arguments regarding claims 12–15. Except for our ultimate decision, we do not discuss the 35 U.S.C. § 103(a) rejection of claims 12–15 further herein.

OPINION

We have reviewed the rejections in light of Appellant’s arguments that the Examiner has erred. We concur with the conclusions reached by the Examiner. We highlight the following points.

A. Section 101

An invention is patent eligible if it claims a “new and useful process, machine, manufacture, or composition of matter.” 35 U.S.C. § 101. However, the U.S. Supreme Court has long interpreted 35 U.S.C. § 101 to include implicit exceptions: “[l]aws of nature, natural phenomena, and abstract ideas” are not patentable. *E.g.*, *Alice Corp. Pty. Ltd. v. CLS Bank International*, 573 U.S. 208, 216 (2014).

In determining whether a claim falls within an excluded category, we are guided by the Court’s two-part framework, described in *Mayo* and *Alice*. *Id.* at 217–18 (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 75–77 (2012)). In accordance with that framework, we first determine what concept the claim is “directed to.” *See Alice*, 573 U.S. at 219 (“On their face, the claims before us are drawn to the concept of intermediated settlement, *i.e.*, the use of a third party to mitigate settlement risk.”); *see also Bilski v. Kappos*, 561 U.S. 593, 611 (2010) (“Claims 1 and 4 in petitioners’ application explain the basic concept of hedging, or protecting against risk.”).

Concepts determined to be abstract ideas, and thus patent ineligible, include certain methods of organizing human activity, such as fundamental economic practices (*Alice*, 573 U.S. at 219–20; *see also Bilski*, 561 U.S. at 611); mathematical formulas (*Parker v. Flook*, 437 U.S. 584, 594–95 (1978)); and mental processes (*Gottschalk v. Benson*, 409 U.S. 63, 67

(1972)). Concepts determined to be patent eligible include physical and chemical processes, such as “molding rubber products” (*Diamond v. Diehr*, 450 U.S. 175, 191 (1981)); “tanning, dyeing, making waterproof cloth, vulcanizing India rubber, smelting ores” (*id.* at 182 n.7 (quoting *Corning v. Burden*, 56 U.S. 252, 267–68 (1853))); and manufacturing flour (*Benson*, 409 U.S. at 69 (citing *Cochrane v. Deener*, 94 U.S. 780, 785 (1876))).

In *Diehr*, the claim at issue recited a mathematical formula, but the Court held that “a claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula.”

Diehr, 450 U.S. at 187, 191 (“We view respondents’ claims as nothing more than a process for molding rubber products and not as an attempt to patent a mathematical formula.”). Having said that, the Court also indicated that a claim “seeking patent protection for that formula in the abstract . . . is not accorded the protection of our patent laws, and this principle cannot be circumvented by attempting to limit the use of the formula to a particular technological environment.” *See, e.g. id.* at 187 (“It is now commonplace that an *application* of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection.”), and 191 (citation omitted) (citing *Benson* and *Flook*).

If the claim is “directed to” an abstract idea, we turn to the second step of the *Alice* and *Mayo* framework, where “we must examine the elements of the claim to determine whether it contains an ‘inventive concept’ sufficient to ‘transform’ the claimed abstract idea into a patent-eligible application.” *Alice*, 573 U.S. at 221. “A claim that recites an abstract idea must include ‘additional features’ to ensure ‘that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].’” *Id.*

(quoting *Mayo*, 566 U.S. at 77). “[M]erely requir[ing] generic computer implementation[] fail[s] to transform that abstract idea into a patent-eligible invention.” *Id.*

B. USPTO
35 U.S.C. 101 Guidance

In January 2019, the U.S. Patent and Trademark Office (USPTO) published revised guidance on the application of 35 U.S.C. § 101. *See 2019 Revised Patent Subject Matter Eligibility Guidance*, 84 Fed. Reg. 50 (Jan. 7, 2019) (“2019 Revised Guidance”). “All USPTO personnel are, as a matter of internal agency management, expected to follow the guidance.” *Id.* 2019 Revised Guidance, 84 Fed. Reg. 51; *see also* October 2019 Update 1.⁴

Under the 2019 Revised Guidance and the October 2019 Update, we first look to whether the claim recites:

- (1) any judicial exceptions, including certain groupings of abstract ideas (i.e., mathematical concepts, certain methods of organizing human activity such as a fundamental economic practice, or mental processes) (“Step 2A, Prong One”); and
- (2) additional elements that integrate the judicial exception into a practical application (*see* MPEP §§ 2106.05(a)–(c), (e)–(h) (9th ed. rev. 08.2017 Jan. 2018)) (“Step 2A, Prong Two”).⁵

⁴ In response to received public comments, the Office issued further guidance on October 17, 2019, clarifying the 2019 Revised Guidance. USPTO, *October 2019 Update: Subject Matter Eligibility* (“October 2019 Update”) (available at https://www.uspto.gov/sites/default/files/documents/peg_oct_2019_update.pdf).

⁵ This evaluation is performed by (a) identifying whether there are any additional elements recited in the claim beyond the judicial exception, and (b) evaluating those additional elements individually and in combination to

2019 Revised Guidance, 84 Fed. Reg. 52–55.

Only if a claim (1) recites a judicial exception and (2) does not integrate that exception into a practical application, do we then look, under Step 2B, to whether the claim:

(3) adds a specific limitation beyond the judicial exception that is not “well-understood, routine, conventional” in the field (*see* MPEP § 2106.05(d)); or

(4) simply appends well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception.

2019 Revised Guidance, 84 Fed. Reg. 52–56.

C. Examiner’s 35 U.S.C. § 101 Rejection — *Alice/Mayo* — Steps 1 and 2

C.1. 2019 Revised Guidance, Step 2A – Prong One

Applying the *Alice/Mayo* analysis, the Examiner determines that claims 1, 11, and 16 recite an abstract idea:

Independent claims 1, 11 and 16 recite, in part, steps for retrieving similar cases with visually-similar tumors to a input case, calculating statistics based on non-image based clinical information of the similar cases, presenting the similar cases and the statistics to a user, matching the input case to the similar cases based on a user selected clinical information criterion, wherein the features are weighted based on user input, where the similarity is measured by a weighted combination of Euclidean and Mahalanobis distances. These steps describe the concept of querying a database, which corresponds to concepts

determine whether the claim as a whole integrates the exception into a practical application. *See* 2019 Revised Guidance, 84 Fed. Reg. 54–55, Section III(A)(2).

identified as abstract ideas by the courts, such as collecting information, analyzing it, and displaying certain results of the collection and analysis in *Electric Power Group, LLC v. Alstom S.A.*, 830 F.3d 1350 (Fed. Cir. 2016), searching and retrieving data in *Intellectual Ventures I, LLC v. Erie Indemnity Co.*, No. 2016-1128 (Fed. Cir. March 7, 2017), and organizing information through mathematical correlations in *Digitech Image Technologies, LLC v. Electronics for Imaging, Inc.*, 758 F.3d 1344 (Fed. Cir. 2014). All of these concepts, like the concept of the instant claims, is directed to starting with data, adding an algorithm, and ending with a new form of data. See *RecogniCorp, LLC v. Nintendo Co., Ltd.*, No. 2016-1499, slip op. at 9 (Fed. Cir. April 28, 2017). The concept described in the independent claims is not meaningfully different than those concepts found by the courts to be abstract ideas. As such, the description in the independent claims of retrieving information.

Final Act. 6.

C.2. 2019 Revised Guidance, Step 2A – Prong Two

Further applying the *Alice/Mayo* analysis, the Examiner determines the claims are directed to an abstract idea:

The additional steps recited do not meaningfully add limitations to the idea of “retrieving information” beyond generally linking the system to a particular technological environment. The Applicant’s claimed invention does not solve a technological problem, nor does it present a technological solution. The above claimed features are not significant more than the abstract idea because they do not recite an improvement to another technology or technical field, an improvement to the functioning of the computer itself, or meaningful limitations beyond generally linking the use of an abstract idea to a particular technological environment. Applicant did not persuasively pose the claims as a technical solution to a technical problem since it is neither a technical problem nor a technical solution; they are business solutions to the identified business process problem (i.e. not a technical

problem). The inventive concept is thus neither addressing any "technical" problem nor "necessarily rooted in computer technology in order to a problem specifically arising in the realm of computer[s]." See *DOR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1257 (Fed. Cir. 2014); *Intellectual Ventures I LLC v. Capital One Bank*, 792 F.3d 1363, 1371 (Fed. Cir. 2015). The instant invention does not purport to be an improvement to how a query is performed, but merely a type of query. As such, it is not a technological solution but rather a business solution. The problem — identifying similar clinical cases to a patient's case — is a business problem, not a technical problem.

Final Act. 8–9.

C.3. 2019 Revised Guidance, Step 2B

Applying the *Alice/Mayo* analysis, the Examiner determines:

The [S]pecification, pg. 13, describes a generic computer performing the claimed invention. The claims at issue “simply instruct the practitioner to implement the abstract idea of [generating a query from an analysis workflow] on a generic computer.” See *Alice Corp. v. CLS Bank Int’l*, 134 S.Ct. 2347, 2359 (2014); *Versata Dev. Grp., Inc. v. SAP Am., Inc.*, 793 F.3d 1306, 1332 (Fed. Cir. 2015). However, ***claims 1 and 16 appear to, on their face, not require a computer at all, and appear to be directed to purely mental steps. Furthermore, the particular means of measuring similarity is not significantly more than the abstract idea itself.*** “A claim directed to an abstract idea does not automatically become eligible merely by adding a mathematical formula.” *RecogniCorp*, slip op. at 10. The underlying concept - that of providing a quantifiable measure of similarity between one clinical case and another - is a mental process that the claimed invention merely purports to incidentally require the use of the computer to carry out.

The claims do not include additional elements that are sufficient to amount to significantly more than the judicial exception because the additional elements when considered both individually and as an ordered combination do not

amount to significantly more than the abstract idea. Claim 11 recites a computer-readable medium and units. The “medium” and “units” - which are software units - are recited at a high level of generality and are recited as performing generic computer functions routinely used in computer applications. ***Generic computer components recited as performing generic computer functions that are well-understood, routine and conventional activities amount to no more than implementing the abstract idea with a computerized system.*** Thus, taken alone, the additional elements do not amount to significantly more than the above-identified judicial exception (the abstract idea). Looking at the limitations as an ordered combination adds nothing that is not already present when looking at the elements taken individually. ***There is no indication that the combination of elements improves the functioning of a computer or improves any other technology.*** Their collective functions merely provide conventional computer implementation. The instant claims recite the use of such a computer, but do not recite an improvement in another technology or technical field, nor do they purport to perform the functioning of the computer itself. ***The specification states that the system requires no more than a generic computer to perform generic functions that are well-understood, routine, and conventional activities previously known in the industry.***

Final Act. 6–8 (emphasis added).

D. Appellant’s 35 U.S.C. § 101 Arguments & Board Analysis

In arguing that the claims were improperly rejected under 35 U.S.C. §101, Appellant does not make specific reference to any recited limitation and does not explain how or why the language of any claim defines a patent-eligible invention. *See* Appeal Br. 7–13; *see also* Reply 3–5. As a result, Appellant’s 35 U.S.C. § 101 arguments are not supported by any cited claim language and are, therefore, substantially weak. We have fully considered

Appellant's arguments and conclude that the claims were properly rejected under 35 U.S.C. § 101.

First, Appellant contends that the claims are not directed to an abstract idea. *See* Appeal Br. 7 (“[T]he Examiner alleges that claims 1, 2, 8, 10-16 are drawn to []abstract ideas. . . . Applicants respectfully traverse and submit that all pending claims are directed to statutory subject matter.”).

Specifically, Appellant argues:

It is submitted that the present claims do not claim an end result, but rather claim only a limited and specific apparatus or method for achieving the end result, hence are not directed to an abstract idea.

For example, claim 11 performs similarity matching to identify previous case similar to a current case with hardware and computer operations. Claim 11 does not protect the end result, *i.e.*, performing similarity matching to identify previous case similar to a current case with hardware and computer operations by any apparatus, means, or steps whatsoever. Rather, it only would provide protection for one who achieves this result through the combination of hardware and computer operations set forth in claim 11.

Claims 1 and 16 call for a method for performing similarity matching to identify previous case similar to a current case with hardware and computer operations. Claims 1 and 16 do not perform similarity matching to identify previous case similar to a current case with hardware and computer operations regardless by what method they are generated. Rather, it only protects the specific combination of steps set forth in claims 1 and 16.

Appeal Br. 9–10. We do not find this argument persuasive as it misdirected and not supported by the claim language. The Examiner did not reject the claims as directed to an abstract idea because they “claim an end result.”

And, we do not agree that the claims are not directed to an abstract idea because “only a limited and specific apparatus or method for achieving the end result” and specific “hardware and computer operations” are claimed. Appeal Br. 9. With regard to claims 1 and 16, the Appellant is wrong that these claims “call for a method for performing similarity matching to identify previous case similar to a current case with hardware and computer operations.” *Id.* We agree with the Examiner that “claims 1 and 16 appear to, on their face, not require a computer at all, and appear to be directed to purely mental steps” and “[t]he underlying concept — that of providing a quantifiable measure of similarity between on clinical case and another — is a mental process that the claimed invention merely purports to incidentally require the use of the computer to carry out.” *See* Final Act. 7. There are no steps recited in claims 1 and 16 that limit the scope of the claimed methods to any particular apparatus or hardware and computer operations. And, we agree with the Examiner’s response to this argument stating: “Using Appellant’s characterization of the invention, that specific steps are claimed to identify previous cases similar to the current case does not detract from a conclusion that the claims are directed to an abstract idea, such as ‘identifying previous cases similar to a current case.’” Ans. 19.

With regard to claim 11, the preamble recites that it is directed to an apparatus but the only clearly recited structure is “a non-transitory computer-readable medium that stores computer-executable instructions” and a “database” that the “instructions” act upon. The “instructions”

comprise a set of “units” for performing functions. No hardware or computer elements are expressly recited in claim 11. Claim 11 does not expressly recite that the recited functions are performed by any specific structure or apparatus. In the Specification, Figure 3, reproduced below, is described as “a block diagram showing an exemplary embodiment of an apparatus.” Spec. 6.

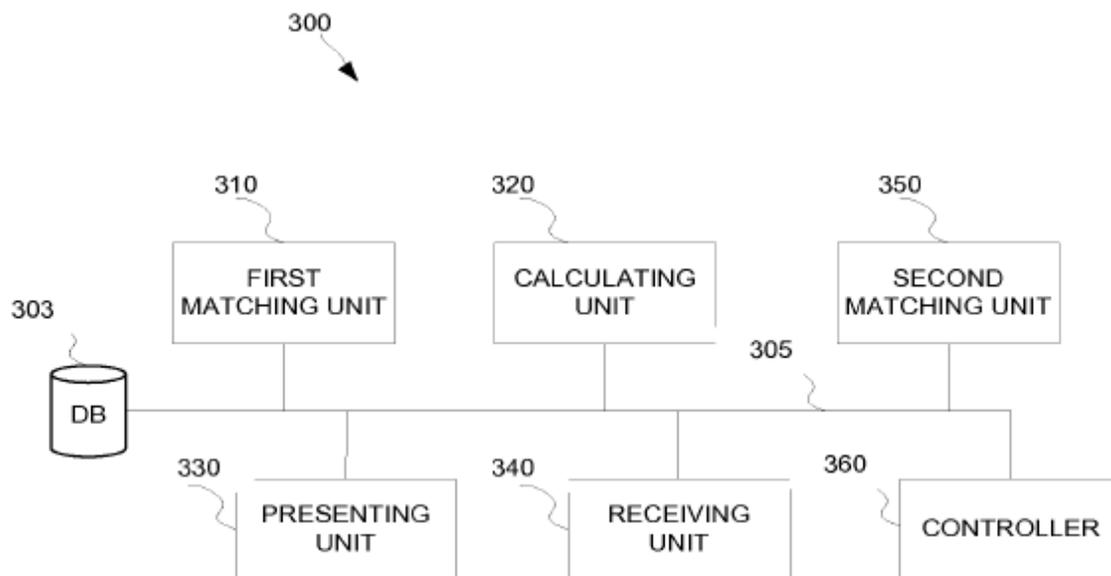


Fig.3

Figure 3 depicts this apparatus as five units connected by internal bus 305 to a database, DB 303, and controller 360. *See also* Spec. 14. However, claim 11 does not recite an internal bus or a controller. Each unit in Figure 3 is depicted as a labeled, rectangular box and, in the detailed description, is described as a “unit” for performing a function (just as in claim 11). *See* Spec. 13. No structure or apparatus is depicted or described for performing the functions. With regard to claim 11, the Examiner states:

Claim 11 recites a computer-readable medium and units. The "medium" and "units" — which are software units — are recited at a high level of generality and are recited as

performing generic computer functions routinely used in computer applications. Generic computer components recited as performing generic computer functions that are well-understood, routine and conventional activities amount to no more than implementing the abstract idea with a computerized system. Thus, taken alone, the additional elements do not amount to significantly more than the above-identified judicial exception (the abstract idea). Looking at the limitations as an ordered combination adds nothing that is not already present when looking at the elements taken individually. There is no indication that the combination of elements improves the functioning of a computer or improves any other technology. Their collective functions merely provide conventional computer implementation. The instant claims recite the use of such a computer, but do not recite an improvement in another technology or technical field, nor do they purport to perform the functioning of the computer itself. The specification states that the system requires no more than a generic computer to perform generic functions that are well-understood, routine, and conventional activities previously known in the industry.

Final Act. 7–8. We find that the Examiner’s analysis is well-founded and agree that claim 11 is directed to an abstract idea. Appellant does not refer to any language in claim 11 in support of its argument that it is not directed to an abstract idea and we discern none.⁶

Appellant argues that the claims are directed to a “complex process” not a “mental process.” Appeal Br. 11; *see also* Reply 4. Specifically, Appellant states:

[T]he present claims are not directed to a mental process, but rather to systems and methods for comparing multiple, unique

⁶ If prosecution continues, we respectfully suggest that it be considered whether claim 11 and its dependents are indefinite as invoking 35 U.S.C. § 112 (f) or pre-AIA 35 U.S.C. § 112, sixth paragraph, as expressing elements as means for performing a specified function but failing to describe

criteria of a plurality of cases to find similar historical cases to a current case. This is not a mental process, but rather a complex process in which multiple studies must be analyzed to find this similar set of cases.

Appeal Br. 11. The purported distinction between a “complex process” and a “mental process” lacks merit. Appellant does not persuasively show that comparing multiple, unique criteria to find similar cases cannot be performed mentally even accepting that such a process may be complex.

And, Appellant argues that “common sense” shows the claims are not directed to an abstract idea. Appeal Br, 11. Specifically, Appellant states:

In the present claims, medical records are collected and analyzed to find similar historical records for a current patient. This cannot be performed without the help of computer technology, and would require specific processes and programs to analyze these cases and perform the similarity matching operations. Thus, “common sense” dictates that the claims are directed to “significantly more” than an abstract idea.

Appeal Br. 11. We find this argument to be unsound and not persuasive. Appellant has not shown that the claims cannot be performed “without the help of computer technology” or that the claimed invention “would require specific processes and programs.” Appeal Br. 11. The Appellant does not point to any specific language in the claims that supports limiting the claims

any corresponding structure for performing the function. *See Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1348 (Fed. Cir. 2015) (en banc) (In the absence of the word “means,” the presumption that means-plus-function does not apply may be overcome if “the claim fails to ‘recite sufficiently definite structure’ or else recites ‘function without reciting sufficient structure for performing that function.’”); *see also* Manual of Patent Examining Procedure § 2181 (9th ed. Rev. 08.2017, Jan. 2018) (identifying “unit for” as a non-structural generic placeholder).

as Appellant argues. To the contrary, the claims define the invention in broad terms and Appellant has not shown why the claims should be so limited.

With regard to the dependent claims, Appellant argues:

The Examiner has failed to make any showing that any of the dependent claims fail to set forth significantly more. By definition, every dependent claim further refines its parent claim(s), i.e., adds something more. Thus, every dependent claim must be analyzed individually to determine whether all of the limitations of the dependent claim and its parent claim(s) as an ordered combination is something more. In addition, *In Re Abele* 684 F.2d 902 (CCPA 1982), in which parent claim 5 was held by the Federal Circuit to be patent ineligible under 35 U.S.C. §101, but dependent claim 6 which depends from claim 5 was held to be patent-eligible.

Appeal Br. 10. With regard to the dependent claims, the Examiner found “[t]he generic computer functions of claims 2, 8, 10 and 12-15 recited therein are those that courts have recognized as well-understood, routine, and conventional activities such as receiving data, determining data, calculating data, selecting and sending data.” Final Act. 9. The mere fact that the dependent claims are directed to further limitations and further refine the parent claims does not support a finding that the dependent claims define a patent-eligible invention. Appellant does not point to any language in any of the pending dependent claims that would support a finding that the dependent claims are not directed to an abstract idea. Dependent claims that merely narrow an abstract idea “add nothing outside the abstract realm.” *SAP Am., Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1169 (Fed. Cir. 2018). Adding “a degree of particularity” does not save a claim from abstraction. *See Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 715 (Fed. Cir. 2014); *see*

also BSG Tech LLC v. BuySeasons, Inc., 899 F.3d 1281, 1287 (Fed. Cir. 2018) (explaining that “a claim is not patent eligible merely because it applies an abstract idea in a narrow way”).

Conclusion on Section 101 Rejection

In light of the above, and consistent with the Examiner’s determinations, we conclude that the claims are directed to an abstract idea and do not contain an “inventive concept” or additional features that transform that abstract idea into a patent-eligible invention. Hence, we sustain the 35 U.S.C. § 101 rejection.

E. Examiner’s 35 U.S.C. § 103(a) Rejection

Regarding independent claim 1, the Examiner found the combination of Castelli, Zahlmann, Nakamura, Yoshii, Zhou I, and Zhou II teaches or suggests all the limitations of claim 1 and that there existed a motivation to combine the relevant teachings or suggestions. Final Act. 10–16. The Examiner also found that this combination teaches or suggests all the limitations of dependent claims 2, 8, and 10. Final Act. 16–17. The Examiner further found that the combination of Castelli and Zahlmann teaches or suggests all the limitations of claims 11–16 and that there existed a motivation to combine the relevant teachings or suggestions. Final Act. 17–25.

F. Appellant’s 35 U.S.C. § 103(a) Arguments & Board’s Analysis

Appellant argues that the 35 U.S.C. § 103(a) rejection was improper because “[t]he cited combination of references fails to describe each and every aspect set forth in the subject claims.” Appeal Br. 11. Appellant argues limitations recited in independent claims 1, 11, and 16. Appeal Br.

14–23. We conclude that the Examiner properly rejected all the pending claims under 35 U.S.C. § 103(a).

With regard to independent claims 1, 11, and 16, Appellant argues that **Castelli** does not disclose “the cases in the database including a plurality of images classified according to different imaging modalities, the first step of similarity matching between an input case and cases in the database being performed for each imaging modality to identify a plurality of respective sets of similar cases by using said first matching criterion” as recited in claims 1 and 16 and similarly recited in claim 8. Appeal Br. 14–15, 18, 22. However, the Examiner cited **Zhalmann** as teaching these elements. Final Act. 12–13 (claim 1), 19–20 (claim 11), 24–25 (claim 24–25). Thus, Appellant argued the wrong reference. The Examiner’s Answer stated: “Castelli is not relied on to teach classifying images according to their respective imaging modality, Zhalmann is” and “Castelli is not relied on to teach performing similarity matching for each imaging modality; Zhalmann is (e.g., where the size of a tumor in an MRI scan is compared to the size of the tumor in a CT scan).” Ans. 20. We find Appellant’s argument not to be persuasive because it is misdirected.

In the Reply, Appellant presents an entirely new argument. The Reply states:

In the Examiner’s Answer, the Examiner alleges that Zhalmann discloses classifying images by modality. Zhalmann merely discloses that images include metadata including the type of modality used to obtain the image. However, Zhalmann does not disclose classifying the images by modality, in particular for performing similarity matching between the images based on modality, as recited in the present claims.

Reply 5. As discussed above, the showing by the Examiner that Zahlmann taught the disputed limitations was not raised for the first time in the Answer but was set forth in the Final Action. Appellant has not established good cause for not including this argument in the Appeal Brief and presenting it for the first time in the Reply. This argument will not be considered. *See* 37 C.F.R. §§ 41.37(c)(1)(iv) (“Except as provided for in §§ 41.41, 41.47 and 41.52, any arguments or authorities not included in the appeal brief will be refused consideration by the Board for purposes of the present appeal.”), 41.41(b)(2) (“Any argument raised in the reply brief which was not raised in the appeal brief, or is not responsive to an argument raised in the examiner’s answer, including any designated new ground of rejection, will not be considered by the Board for purposes of the present appeal, unless good cause is shown.”).

Appellant argues that the Examiner has not shown that Castelli teaches or suggests, “wherein the user input further comprises a numerical value given to each feature in the criterion, and the second step of performing similarity matching includes calculating a similarity metric by the using the numerical values” as recited in independent claims 1, 11, and 16. Appeal Br. 14–15 (claim 1), 18–19 (claim 11), and 22–23 (claim 16). The Examiner cited the following passage in Castelli as teaching this limitation (Final Act. 13, 20):

Query reformulation: Content-based retrieval systems can use image clip to find “all images with features similar to the clip[.]” In this case, the features extracted from the example will be used as the initial query. The reformulated query could contain a feature vector which is derived from a set of examples and counterexamples provided by the user. Note

that different iterations of the user feedback may have different weights in calculating the “composite queries.”

Castelli 8:4–12. Appellant argues:

There is nothing cited in this cited portion of Castelli that discloses a numerical value given to each feature in the criterion. Rather, this cited portion only discloses an initial query and a reformulated query, but does not describe what these queries include. The Examiner alleges that the user input is a yes or no if a document is similar. However, this cited portion does not disclose a “yes” or “no” option. Regardless, a yes/no query does not constitute a numerical value given to each feature in the criterion, as recited in claim 1. In addition, Castelli does not disclose performing similarity matching includes calculating a similarity metric by using the numerical values.

Appeal Br. 15, 19, 22–23. The Examiner responds:

Appellant argues that Castelli does not teach user input including a numerical value given to each feature in the criterion. Examiner respectfully disagrees. The portion of Castelli cited by both Examiner and Appellant teaches deriving a feature vector from user input (both a feature vector from the initial clip, as well as an refined derived feature vector from the iterations of user feedback using examples and counterexamples). A feature vector is a collection of numerical values for each feature in the feature vector. Therefore the user input gives a numerical value to each feature.

Ans. 21. Thus, the Examiner relies on the description of a “feature vector” in Castelli as teaching “a collection of numerical values for each feature.”

The Applicant replies:

In the Examiner's Answer, the Examiner alleges that Castelli discloses including a numerical value give to each feature in a matching criterion. The alleged numerical value is in the form from a feature vector. As noted by the Examiner, a

feature vector is a collection of numerical values (i.e., more than one). This is different from the present claims, which recite a numerical value for each feature.

Reply 5. We do not find Appellant's argument to be persuasive. Appellant does not dispute that "a feature vector is a collection of numerical values (i.e., more than one)." Appellant asserts, in a conclusory fashion, that "[t]his is different from the present claims, which recite a numerical value for each feature" but provides no reasoning or explanation that supports such a conclusion. *See* 37 C.F.R. § 41.47 (c)(1)(iv) ("The arguments shall explain why the examiner erred as to each ground of rejection contested by appellant."). The Appellant has not shown how or explained why the Examiner erred.

Appellant argues that the Examiner has failed to show Castelli teaches or suggests "user input" as recited in the independent claims. Appeal Br. 15. However, Appellant fails to identify the specific finding made by the Examiner that is disputed, the specific portions of Castelli that support its assertions, or the specific language or limitations in the claims that are relied upon. As such, this argument is unsupported and not explained. Nonetheless, the Examiner does show that Castelli teaches "user input." In rejecting claims 1, 11, and 16, the Examiner cites the following passage in Castelli as teaching user input (Final Act. 11 (claim 1), 18 (claim 11), 23 (claim 16)):

An example of a method for generating indexes having features of the present invention includes the steps of: (1) initial retrieval of feature vectors that are "similar" to the specification of the user query; (2) *user input* specifying the quality of the returned results (in the simplest case, the user indicates whether a retrieved result is similar or not similar)

Castelli 5:46–51 (emphasis added). We do not find this argument persuasive.

Finally, with regard to the independent claim 1, Appellant argues:

[C]laim 1 recites that the steps of performing similarity matching include calculating a similarity value for each case to be compared, for indicating the degree of similarity between the input case and the case to be compared, the similarity value being a weighted combination of a Euclidean distance and Mahalanobis distance. Castelli discloses a similarity value that is a Euclidean distance, and Zhou II discloses a similarity value that is a Mahalanobis distance, but neither reference discloses that *the similarity value is a weighted combination of a Euclidean distance and Mahalanobis distance*, as recited in claim 1. None of the secondary references disclose these features of claim 1.

Appeal Br. 15–16. With regard to this limitation, the Examiner found:

It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Zhou II with those of Castelli, Zahlmann, Nakamura, Yoshii, and Zhou I to measure the similarity value of Castelli as a weighted Euclidian distance and Mahalanobis distance as in Zhou II in order to provide an accurate query-by-example system directed to clinical cases.

Final Act. 16. The Examiner relied on a combination of Castelli and Zhou II and never contended that any reference alone taught the disputed limitation. Thus, Appellant fails to address the rejection the Examiner made and, for this reason, we do not find this argument persuasive.

Conclusion on Section 103 Rejections

In light of the above, and consistent with the Examiner's determinations, we conclude that the claims would have been obvious in view of the cited art. Hence, we sustain the 35 U.S.C. § 103(a) rejections.

CONCLUSION

The Examiner has not erred in rejecting claims 1, 2, 8, and 10–16 under 35 U.S.C. § 101, as being directed to patent-ineligible subject matter.

The Examiner has not erred in rejecting claims 1, 2, 8, and 10–16 as being unpatentable under 35 U.S.C. §103(a).

The Examiner's rejection of claims 1, 2, 8, and 10–16 under 35 U.S.C. § 101, as being directed to patent-ineligible subject matter, is affirmed.

The Examiner's rejection of claims 1, 2, 8, and 10–16 as being unpatentable under 35 U.S.C. §103(a) is affirmed.

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)Basis/	Affirmed	Reversed
1, 2, 8, 10–16	101	Eligibility	1, 2, 8, 10–16	
1, 2, 8, 10	103(a)	Castelli, Zahlmann, Nakamura, Yoshii, Zhou I, Zhou II	1, 2, 8, 10	
11–16	103(a)	Castelli, Zahlmann	11–16	
Overall Outcome			1, 2, 8, 10–16	

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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