



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/963,750	08/09/2013	Suresh N. Chari	YOR920130303US3 (30043Z)	6519
48233	7590	09/10/2020	EXAMINER	
SCULLY, SCOTT, MURPHY & PRESSER, P.C. 400 GARDEN CITY PLAZA SUITE 300 GARDEN CITY, NY 11530			MISIASZEK, AMBER ALTSCHUL	
			ART UNIT	PAPER NUMBER
			3626	
			NOTIFICATION DATE	DELIVERY MODE
			09/10/2020	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

IBMPAIRENotify@ssmp.com

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte SURESH N. CHARI, CHRISTOPHER GATES,
STEPHEN C. GATES, YOUNGJA PARK, and WILFRIED TEIKEN

Appeal 2018-009014
Application 13/963,750¹
Technology Center 3600

Before JOHN A. JEFFERY, MARC S. HOFF, and SCOTT B. HOWARD,
Administrative Patent Judges.

HOFF, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant appeals under 35 U.S.C. § 134 from a final rejection of claims 1, 2, and 4–13.² We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

Appellant’s invention is a system and method for automatically estimating computer asset sensitivity. Spec. ¶ 2. This estimation process may rely on external information such as attributes of asset users, their access

¹ We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant states that the real party in interest is International Business Machines Corporation. Appeal Br. 3.

² Claim 3 has been cancelled.

patterns, and other published data content by users. The estimation process may therefore not require direct access to the target assets or to privileged knowledge about the assets. Spec. ¶ 18.

Claim 1 is reproduced below:

1. A system for automatically estimating a sensitivity level of an information technology asset, comprising:

a processor; and

an asset sensitivity estimator operable to execute on the processor and further operable to obtain information about an asset, the asset sensitivity estimator further operable to compare characteristics of the asset assigned based on the information, with stored characteristics of known sensitive assets, the asset sensitivity estimator further operable to determine a sensitivity level of the asset based on the comparing, the asset sensitivity estimator obtaining the information without having to access the asset such that privacy of the computer network is preserved,

the asset sensitivity estimator comprising a machine learning algorithm trained to learn the sensitivity level of the asset based on features comprising user features comprising job role, and indication of whether a user is a manager or non-manager, and organizational level, usage features comprising access frequency and access pattern, and external content features comprising external data content, wherein the features are normalized and input to the machine learning algorithm to train the processor, the processor executing the asset sensitivity estimator trained to determine the sensitivity level via the machine learning algorithm,

wherein a corresponding sensitivity level is identified for each of multiple assets, the system facilitating computer security protection by automatically identifying a target asset among the multiple assets based on the corresponding sensitivity level for providing security protection.

Claims 1, 2, and 4–13 stand rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Final Act. 3.

Throughout this decision, we make reference to the Appeal Brief (“Appeal Br.,” filed Mar. 16, 2018), the Reply Brief (“Reply Br.,” filed Sept. 13, 2018), and the Examiner’s Answer (“Ans.,” mailed July 17, 2018) for their respective details.

ISSUES

1. Does the claimed invention recite an abstract idea?
2. Is the recited abstract idea integrated into a practical application?

PRINCIPLES OF LAW

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 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. *See, e.g., Alice Corp. v. CLS Bank Int’l*, 573 U.S. 208, 216 (2014).

In determining whether a claim falls within an excluded category, we are guided by the Supreme Court’s two-step 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; *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, 69 (1972)). Concepts determined to be patent eligible include physical and chemical processes, such as “molding rubber products” (*Diamond v. Diehr*, 450 U.S. 175, 192 (1981)); “tanning, dyeing, making waterproof cloth, vulcanizing India rubber, smelting ores” (*id.* at 184 n.7 (quoting *Corning v. Burden*, 56 U.S. 252, 267–68 (1854))); 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 Supreme Court held that “[a] claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula.” *Diehr*, 450 at 176; *see also id.* at 192 (“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 Supreme 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.” *Id.* (citing *Benson* and *Flook*); *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.”).

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 (quotation marks omitted). “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.*

The PTO recently published revised guidance on the application of § 101. USPTO’s January 7, 2019 Memorandum, *2019 Revised Patent Subject Matter Eligibility Guidance* (“Memorandum”).³

84 Fed. Reg. 50. Under that guidance, 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); and

³ 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 (the “October 2019 Update”) (available at https://www.uspto.gov/sites/default/files/documents/peg_oct_2019_update.pdf).

(2) additional elements that integrate the judicial exception into a practical application (*see* MPEP § 2106.05(a)–(c), (e)–(h)).

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

(3) adds a specific limitation beyond the judicial exception that are 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.

See Memorandum.

ANALYSIS

Representative claim 1 recites the following limitations. (Independent claims 4 and 11 recite analogous limitations.) Aspects of the claimed abstract idea are indicated in italics. Additional non-abstract limitations are noted in bold:

1. A system for automatically estimating a sensitivity level of an information technology asset, comprising:
a **processor**; and
an asset sensitivity estimator operable to execute on the **processor** and further operable to (a) *obtain information about an asset, the asset sensitivity estimator further operable to* (b) *compare characteristics of the asset assigned based on the information, with stored characteristics of known sensitive assets, the asset sensitivity estimator further operable to* (c) *determine a sensitivity level of the asset based on the comparing, the asset sensitivity estimator obtaining the*

*information without having to access the asset such that privacy of the **computer network** is preserved,*

*the asset sensitivity estimator comprising a machine learning algorithm trained to (d) *learn the sensitivity level of the asset based on features comprising user features comprising job role, and indication of whether a user is a manager or non-manager, and organizational level, usage features comprising access frequency and access pattern, and external content features comprising external data content, wherein the features are normalized and input to the machine learning algorithm to train the **processor**, the **processor** (e) executing the asset sensitivity estimator trained to determine the sensitivity level via the machine learning algorithm,**

*wherein (f) *a corresponding sensitivity level is identified for each of multiple assets, the system facilitating computer security protection by automatically identifying a target asset among the multiple assets based on the corresponding sensitivity level for providing security protection.**

These limitations, under the broadest reasonable interpretation, constitute steps to estimate the sensitivity level of an information technology asset without having to access the asset. A machine-learning algorithm is employed to learn the sensitivity of the information technology asset based on user features, usage features, and external content features.

We determine that limitation (a) corresponds to the gathering of data (“obtain information about an asset”).

The Memorandum recognizes that certain groupings of subject matter have been found by the courts to constitute judicially excepted abstract ideas: (a) mathematical concepts, (b) certain methods of organizing human activity, and (c) mental processes. Memorandum, 84 FR at 52. If a claim, under its broadest reasonable interpretation, covers performance in the mind but for the recitation of generic computer components, then it is still in the

mental processes category unless the claim cannot practically be performed in the mind.⁴ We determine that the claim steps beyond those directed to

⁴ See *Intellectual Ventures I LLC v. Symantec Corp.*, 838 F.3d 1307, 1318 (Fed. Cir. 2016) (“[W]ith the exception of generic computer implemented steps, there is nothing in the claims themselves that foreclose them from being performed by a human, mentally or with pen and paper.”); *Mortg. Grader, Inc. v. First Choice Loan Servs. Inc.*, 811 F.3d 1314, 1324 (Fed. Cir. 2016) (holding that computer-implemented method for “anonymous loan shopping” was an abstract idea because it could be “performed by humans without a computer”); *Versata Dev. Grp. v. SAP Am., Inc.*, 793 F.3d 1306, 1335 (Fed. Cir. 2015) (“Courts have examined claims that required the use of a computer and still found that the underlying, patent-ineligible invention could be performed via pen and paper or in a person’s mind.”); *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1375, 1372 (Fed. Cir. 2011) (holding that the incidental use of “computer” or “computer readable medium” does not make a claim otherwise directed to process that “can be performed in the human mind, or by a human using a pen and paper” patent eligible); *id.* at 1376 distinguishing *Research Corp. Techs. v. Microsoft Corp.*, 627 F.3d 859 (Fed. Cir. 2010), and *SiRF Tech., Inc. v. Int’l Trade Comm’n*, 601 F.3d 1319 (Fed. Cir. 2010), as directed to inventions that “could not, as a practical matter, be performed entirely in a human’s mind”). *Mayo*, 566 U.S. at 71 (“[M]ental processes[] and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work” (quoting *Benson*, 409 U.S. at 67)); *Flook*, 437 U.S. at 589 (same); *Benson*, 409 U.S. at 67, 65 (noting that the claimed “conversion of [binary-coded decimal] numerals to pure binary numerals can be done mentally,” *i.e.*, “as a person would do it by head and hand.”); *Synopsys, Inc. v. Mentor Graphics Corp.*, 839 F.3d 1138, 1139, (Fed. Cir. 2016) (holding that claims to the mental process of “translating a functional description of a logic circuit into a hardware component description of the logic circuit” are directed to an abstract idea, because the claims “read on an individual performing the claimed steps mentally or with pencil and paper”); *In re BRCA1 & BRCA2-Based Hereditary Cancer Test Patent Litig.*, 774 F.3d 755, 763 (Fed. Cir. 2014) (concluding that concept of “comparing BRCA sequences and determining the existence of alterations” is an “abstract mental process”); *In re Brown*, 645 F. App’x. 1014, 1017 (Fed. Cir. 2016) (non-precedential) (claim limitations “encompass the mere

extra-solution activity (i.e., gathering, display, or storage of data) – compare characteristics of the asset with stored characteristics; determine a sensitivity level of the asset without having to access the asset; learning the sensitivity level of the asset via a machine learning algorithm; and identifying a corresponding sensitivity level for each of multiple assets – constitute steps that may be performed in the mind, but for the recitation of generic computer components.

Accordingly, we conclude that the claims recite a mental process, one of the categories of abstract ideas recognized in the Memorandum. 84 Fed. Reg. at 52. We thus conclude that the claims recite an abstract idea.

INTEGRATION INTO A PRACTICAL APPLICATION

We next evaluate whether the claims integrate the identified abstract idea, of estimating a sensitivity level of an integration technology asset by using a machine learning algorithm trained to learn the sensitivity level of the asset based on user features, usage features, and external content features, without having to directly access the asset, into a practical application. *See* Memorandum, 84 Fed. Reg. at 51. We consider whether there are any additional elements beyond the abstract ideas that, individually or in combination, “integrate the [abstract ideas] into a practical application,

idea of applying different known hair styles to balance one’s head. Identifying head shape and applying hair designs accordingly is an abstract idea capable, as the Board notes, of being performed entirely in one’s mind”).

using one or more of the considerations laid out by the Supreme Court and the Federal Circuit.” *Id.* at 54–55.

The Revised Guidance Memorandum provides exemplary considerations that are indicative that an additional element may have integrated the exception (i.e., the abstract idea recited in the claim) into a practical application:

- (i) an improvement to the functioning of a computer;
- (ii) an improvement to another technology or technical field;
- (iii) an application of the abstract idea with, or by use of, a particular machine;
- (iv) a transformation or reduction of a particular article to a different state or thing; or
- (v) other meaningful limitations beyond generally linking the use of the abstract idea to a particular technological environment.

See Memorandum, 84 FR at 55; MPEP §§ 2106.05(a)–(c), (e)–(h).

The Examiner finds the claimed invention to be analogous to the invention claimed in *Electric Power Group, LLC v. Alstom S.A.*, 830 F.3d 1350 (Fed. Cir. 2016), and to the invention claimed in *Classen Immunotherapies v. Biogen IDEC*, 659 F.3d 1057 (Fed. Cir. 2011). Final Act. 5. In *Electric Power Group*, the invention was a method of detecting events on an electric power grid in real time. The method included receiving a plurality of data streams from the electric power grid; receiving data from other power system and non-grid data sources; detecting and analyzing events in real time from the plurality of data streams; displaying event analysis results, and displaying concurrent visualization of measurements; and deriving a composite indicator of reliability. *Electric Power Group*, 830 F.3d at 1351–52. The court concluded that “[t]he focus of the asserted claims . . . is on collecting information, analyzing it, and displaying certain

results of the collection and analysis.” *Id.* at 1353. The court concluded that the advance purported by the invention was “not any particular assertedly inventive technology for performing those functions,” and held that the claims were not patent-eligible under § 101.

The invention in *Classen* concerned identifying a first and second group of mammals, the two groups immunized according to different immunization schedules; and comparing the effectiveness of the two immunization schedules, as a result of which one of the immunization schedules may be characterized as lower risk for developing a chronic immune-mediated disorder. *Classen*, 659 F.3d at 1060. The court in *Classen* characterized the claim as “directed to the single step of reviewing the effects of known immunization schedules as shown in the relevant literature.” *Classen*, 659 F.3d at 1067. The court held that the invention “states the idea of collecting and comparing known information.” *Id.*

Appellant responds that the claim is similar to the claims found to be non-abstract and patent eligible in *DDR Holdings, LLC v. Hotels.com, LP*, 773 F.3d 1245 (Fed. Cir. 2015), and *Core Wireless Licensing SARL v. LG Electronics Inc.*, 880 F.3d 1356 (Fed. Cir. 2018). Appeal Br. 7. Appellant argues that the claimed invention “solves a problem of determining a security level of a computer asset without having to directly access that asset or privileged knowledge about the asset,” which avoids creating a security risk to the computer storing the assets as well as to the assets. Appeal Br. 7–8; Spec. ¶ 18. Appellant contends that, as in *DDR Holdings*, the claimed invention is not merely the performance of a known business practice along with the requirement to perform it on the Internet (or on a computer), but is necessarily rooted in computer technology in order to overcome a problem

specifically arising in the realm of computer security. Appeal Br. 7; *DDR Holdings*, 773 F.3d at 1257.

The invention in *Core Wireless Licensing* concerned an improved display interface for small devices like mobile telephones, in which an “application summary” could be reached directly from a menu listing application programs, the application summary displaying a limited list of data offered within the applications, the application summary being displayed while the applications are in an unlaunched state. *Core Wireless Licensing*, 880 F.3d at 1359. The court found that the invention recited a specific improvement over prior systems, resulting in an improved user interface for electronic devices. Consequently, the court concluded that the claims are directed to an improvement in the functioning of computers, and thus not directed to an abstract idea. *Id.* at 1363.

The Examiner responds to Appellant’s *DDR Holdings* argument by insisting that “the present claims amount to merely the application of obtaining information about an asset” and that Appellant’s invention is merely an “attempt to solve commercial problems” in an electronic environment. Ans. 5–6.

We do not find the Examiner’s analogy to *Electric Power Group* and *Classen* persuasive. To be sure, each of those two cases relied upon by the Examiner involved straightforward information gathering and presentation, without “any particular assertedly inventive technology for performing those functions.” *Electric Power Group*, 830 F.3d at 1354. Nevertheless, we agree with Appellant that the disclosed solution to the problem of determining the security level of a computer asset without having to directly access that asset, by extracting meta-level features – user features, usage features,

external content features – is a solution rooted in computer technology to solve a problem that does not exist in the absence of computer technology. *See* Reply Br. 2; Spec. ¶ 26; *DDR Holdings*, 773 F.3d at 1257. We agree with Appellant that the disclosed analysis based on user features, usage features, and/or external content features increases the efficiency of the computer and avoids the possibility of compromising the security of the computer system. As the court held in *Core Wireless Licensing*, we regard those advantages as improvements to the functioning of the computer itself.

Appellant further asserts that the claimed “machine learning algorithm trained to learn the sensitivity level of the asset” based on a specific feature set, “comprising user features comprising job role, and indication of whether a user is a manager or non-manager, and organizational level, usage features comprising access frequency and access pattern, and external content features comprising external data content,” is asserted to train a processor or a machine to become more autonomous and more intelligent, and hence improve computer capabilities or functionality. Appeal Br. 9.

We do not agree with the Examiner that the disclosed machine learning algorithm does not improve computer capabilities or functionality, or involves “the mere application of programming to a computer.” Ans. 6, 7. Appellant discloses that “[s]emi-automatic machine learning algorithms may be provided to automatically estimate the sensitivity of assets, e.g., by using information associated with users,” and as such “do not require direct access to the target assets or privileged knowledge about the assets.” Spec. ¶ 18. The methods of the present disclosure “may apply instance-based learning approaches, making the system domain independent and easy to adapt to new sensitive asset types. Given a small set of known sensitive assets, the

methods of the present disclosure in one embodiment may learn their characteristics and score other sensitive assets using the models.” Spec. ¶ 20. “Extracting of the meta-level features does not require direct access to the target assets or privileged knowledge about the assets, and, thus, allows the methods of the present disclosure in one embodiment to be efficient and easily scalable to a large set of heterogeneous assets.” Spec. ¶ 21.

We conclude that the recitation of a machine learning algorithm trained to learn the sensitivity level of an information technology asset based on meta-level features, without having to directly access the asset, serves to integrate the identified abstract idea into a practical application. Consequently, we do not agree with the Examiner’s conclusion that the claims are directed to patent-ineligible subject matter. We do not sustain the Examiner’s rejection of claims 1, 2, and 4–13 under 35 U.S.C. § 101.

CONCLUSIONS

1. The claimed invention recites an abstract idea.
2. The recited abstract idea is integrated into a practical application.

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/ Basis	Affirmed	Reversed
1, 2, 4–13	101	Eligibility		1, 2, 4–13

ORDER

The Examiner’s decision to reject claims 1, 2, and 4–13 is reversed.

REVERSED