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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte PETER FLOYD SORENSON and DAVID MICHAEL KAPLAN

Appeal 2017-003294
Application 13/540,359
Technology Center 3700

Before WILLIAM A. CAPP, BRANDON J. WARNER, and
ERIC C. JESCHKE, *Administrative Patent Judges*.

CAPP, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellants seek our review under 35 U.S.C. § 134(a) of the non-final rejection of claims 1, 5–7, 10–26, 28, and 29 under 35 U.S.C. § 112, second paragraph, as indefinite, and claims 1, 5–7, 10–26, 28–34, 37–41, and 43–45 under 35 U.S.C. § 101 as being directed to patent-ineligible subject matter.¹ We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

THE INVENTION

Appellants' invention is a system that monitors learner interaction with online training courses. Spec. ¶ 2. Claim 1, reproduced below, is illustrative of the subject matter on appeal.

¹ This matter came before the Board for Oral Hearing on Nov. 29, 2018.

1. A system for evaluating user behavior relating to a course of study comprising:
 - a server computer;
 - a network;
 - a user computer in communication with the server computer over the network;
 - software executing on the server computer transmitting a course of study to said user computer over the network;
 - software executing on said user computer receiving a course of study from said server computer which includes a plurality of user tasks;
 - software executing on said user computer presenting the course of study to a user of said user computer;
 - a pointing device in communication with the user computer;
 - a keyboard in communication with the user computer;
 - wherein the pointing device and keyboard are used to interact with the course of study to generate at least one of user pointing-device events, scrolling events, and keyboard events;
 - software executing on said user computer capturing interaction data indicative of an interaction of the user with the course of study, said interaction data being indicative of more than a selection of an answer or choice made by the user when completing each of the plurality of user tasks, and including the identification and timing of the user pointing-device events, scrolling events, and keyboard events;
 - an analysis module receiving the interaction data and generating a behavioral observation based on the interaction data by identifying sequential behaviors in the interaction data which lead up to the selection of an answer or choice made by the user when completing each of the plurality of user tasks, including comparing a reading time in the interaction data with reading time baseline data, and comparing a response latency in the interaction data with response latency baseline data, the behavioral observation including a determination of the user's interest or confidence in the course of study;
 - wherein the behavioral observation is used to modify the course of study in real time while the course of study is in progress.

OPINION

35 U.S.C. § 112, Second Paragraph, Indefiniteness

The Examiner rejects claim 1 as containing newly amended claim language that conflicts with terms recited later in the claims. Non-Final Action 3. Appellants state that “this rejection is not being appealed.” Appeal Br. 12. We deem this ground of rejection to be unopposed and, therefore, we summarily sustain the Examiner’s section 112 rejection of claim 1 as well as the rejection of claims 5–7, 10–26, 28, and 29 that depend therefrom. *See Hyatt v. Dudas*, 551 F.3d 1307, 1314 (Fed. Cir. 2008).

Patent Eligibility under 35 U.S.C. § 101

The controlling statute provides that “[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.” 35 U.S.C. § 101. The Courts recognize certain judicial exceptions to Section 101, namely: (1) laws of nature, (2) natural phenomena, and (3) abstract ideas. *See Mayo Collaborative Servs. v. Prometheus Labs, Inc.*, 566 U.S. 66, 70–71 (2012).

The Supreme Court has set forth “a framework for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts.” *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S.Ct. 2347, 2355 (2014) (citing *Mayo*, 566 U.S. at 72–73). According to the Supreme Court’s framework, we must first determine whether the claims at issue are directed to one of those concepts. *Id.* If so, we must secondly “consider the elements of each claim both individually and ‘as an ordered combination’ to determine whether the

additional elements ‘transform the nature of the claim’ into a patent-eligible application.” *Id.*

Courts treat collecting information, as well as analyzing information by steps people go through in their minds, as essentially mental processes within the abstract-idea category. *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1353 (Fed. Cir. 2016). In situations where an abstract idea is implemented on a computer, the first step in the *Alice/Mayo* analysis asks whether the focus of the claims is on a specific improvement in computer capabilities or, instead, on a process that qualifies as an “abstract idea” for which computers are invoked merely as a tool. *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335–36 (Fed. Cir. 2016).

The Supreme Court characterizes the second step of the analysis as “a search for an ‘inventive concept’ — *i.e.*, an element or combination of elements that is ‘sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.’” *Alice*, 134 S.Ct. at 2355 (brackets in original) (quoting *Mayo*, 566 U.S. at 72–73). Where the claim is directed to an abstract idea that is implemented on a computer, merely stating the abstract idea while adding the words “apply it” is not enough to establish such an inventive concept. *See Alice*, 134 S.Ct. at 2358.

[I]f that were the end of the § 101 inquiry, an applicant could claim any principle of the physical or social sciences by reciting a computer system configured to implement the relevant concept.

Id. at 2359.

With respect to the first step, the Examiner determines that the claims are directed to an abstract idea. Non-Final Action 4. According to the Examiner:

The claim limitation(s), “software executing on said user computer capturing interaction data indicative of an interaction of the user with the course of study . . . “ and “generating a behavioral observation based on the interaction data by identifying sequential behaviors in the interaction data which lead up to the selection of an answer or choice made by the user when completing each of the plurality of user tasks” is/are directed to an idea itself. Comparing information regarding a sample of test subject to a control or target data, comparing new and stored information and using rules to identify options, and collecting and comparing known information are examples from the July 2015 update that appear similar to claimed subject matter.

Id., citing *Content Extraction and Transmission LLC v. Wells Fargo Bank, Nat’l Ass’n.*, 776 F.3d 1343 (Fed. Cir. 2014).

With respect to the second step of the *Alice/Mayo* analysis, the Examiner finds:

The elements of the claims . . . either further define this abstract idea, recited generic well-known computer processes, or detail insignificant post-solution activity. For example, recitation of “a server computer”, “user computer”, and “a network” is mere generic computer hardware embodiments. “computer in communication with the server computer over the network”, and “software executing on the server/users computer” are long established functions of computer systems . . . that is not fundamental to the problem nor fundamental altered by the solution and therefore constitutes mere extra solution activity. Recitation of “transmitting a course of study to said user computer over the network” and “receiving a course of study from said server computer which includes a plurality of user tasks” is mere routine function of a computer network; these limitations do not further create a specific machine but rather

further detail the processes of routine functions which does not add significantly more. The same [applies] to “presenting the course of study to a user of said user computer”, which merely further defines the embodiment the display of information will take while not altering or specifically defining generic computer process.

12. The limitation, “said interaction data including the identification and timing of user mouse events, scrolling events, and keyboard events” merely defines the structure of the collected data. Defining the data does not alter the specific structure of the invention or function. Especially in light of the fact that no patentable weight or explicit detailing of means for generating the data is recited in the claim. Mouse events, scrolling events, and keyboard events are routinely captured by generic computer hardware and used to convey instructions to the computer; they do not alter the specific structure of the invention or function. Same applies to the limitation “said interaction data being indicative of more than a selection of an answer or choice made by the user when completing each of the plurality of user tasks”.

13. The limitation “comparing response latency in the interaction data with response latency baseline data, the behavioral observation including a determination of the user’s interest or confidence in the course of study” merely further defines the number of times the abstract idea is performed and does not alter the basic premise of the abstract idea. The limitation mere states that the analysis will be conducted by compare sets of data (reading time baseline data vs reading time in the interaction or comparing response latency in same manner) and effecting a choice based on the result. This is still in the realm of abstract ideas such as collecting data, recognizing certain collected data within the data set and storing recognized data in memory and using categories to transmit information. Further defining the abstract idea does not alter the abstract nature of the idea and therefore does not provide significantly more.

Id. at 5–6 (citation omitted).

Appellants argue that claim 1 is not “*directed to*” an abstract idea, but merely “rests upon” or “reflects” the abstract ideas identified by the Examiner. Appeal Br. 15. Appellants argue that the claim is “directed to” a system for “evaluating a user’s interactions with a course of study offered over a computer network.” *Id.* Appellants argue that the system looks for specific types of user hardware interaction, uses data collected from such interaction, and then modifies the course in real time accordingly. *Id.* Appellants deny that the claimed invention is “mere automation” using “generic computer systems.” *Id.* Appellants argue that their invention addresses the challenge of assessing learner engagement in an online environment, which they characterize as a challenge that is particular to computer networks. *Id.* at 15–16, citing *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245 (Fed. Cir. 2014). Appellants similarly attempt to distinguish *Alice* by analogizing the instant case to that of *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327 (Fed. Cir. 2016). Appeal Br. 16–19.

“Information as such is an intangible,” hence abstract, and “collecting information, including when limited to particular content (which does not change its character as information), [i]s within the realm of abstract ideas.” *Elec. Power Grp.*, 830 F.3d at 1353. So, too, is “analyzing information . . . by mathematical algorithms, without more.” *Id.* at 1354. Furthermore, “merely presenting the results of abstract processes of collecting and analyzing information, without more (such as identifying a particular tool for presentation), is abstract as an ancillary part of such collection and analysis.” *Id.* Consequently, claims focused on “collecting information, analyzing it, and displaying certain results of the collection and analysis” are directed to an abstract idea. *Id.* at 1353.

Organizing human activity is recognized by the courts as an abstract idea. *See In re TLI Commc'ns LLC Patent Litig.*, 823 F.3d 607, 613 (Fed. Cir. 2016) (classifying and storing digital images is an abstract idea as a method of organizing human activity); *see also BASCOM Glob. Internet Servs., Inc. v. AT&T Mobility LLC*, 827 F.3d 1341, 1348 (Fed. Cir. 2016) (filtering internet content is an abstract idea as a method of organizing human behavior); *Intellectual Ventures I LLC v. Capital One Bank (USA)*, 792 F.3d 1363, 1367 (Fed. Cir. 2015) (tracking financial transactions to determine whether they exceed a pre-set spending limit is an abstract idea as a method of organizing human activity); *Content Extraction*, 776 F.3d at 1351 (humans have always performed the functions of data collection, recognition, and storage); *Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.*, 758 F.3d 1344, 1350 (Fed. Cir. 2014) (organizing information through mathematical correlations is an abstract idea); *Intellectual Ventures I LLC v. Symantec Corp.*, 838 F.3d 1307, 1318 (Fed. Cir. 2016) (screening messages is an abstract idea as a method of organizing human activity). The claims here are directed to abstract ideas under the principles espoused in *Electric Power Grp*, 830 F.3d at 1353–54.

We are not persuaded by Appellants' effort to characterize “evaluating a user's interactions with a course of study offered over a computer network” and modifying the online course “based on . . . hardware interaction” as anything other than an abstract idea. Appeal Br. 15. In human, face-to-face learning environments, human instructors routinely observe their students and adapt their teaching in response to feedback derived from such observations. It is an exercise that takes place entirely within the human mind and, as such, it is properly characterized as an

abstract idea. *Elec. Power Grp.*, 830 F.3d at 1353 (explaining that collecting and analyzing information by steps people go through in their minds are essentially mental processes within the abstract-idea category). Appellants essentially admit as much in their Specification.

In face-to-face training environments, educators intuitively evaluate learners or lessons by observing learner activity and reactions . . . motivated educators can make use of such observations to adjust their teaching techniques and approach in order to better engage the quiet or struggling student, as well as to acknowledge and further challenge the interested.

Spec. ¶ 56.

Paige Turner® construct 1420” monitors and analyzes learner behaviors in real time, providing a path and process to modify these behaviors - much like a teacher observing a student and correcting his actions.

Spec. ¶ 150.

Here, Appellants are attempting to simulate the mental process of obtaining student feedback using computer automation techniques. Claim 1 comprises generic computer equipment such as: (1) a server; (2) a network; (3) a user computer; (4) a pointing device; and (5) a keyboard. Claims App. The system comprises software to (1) capture and (2) analyze data to generate a “behavioral observation.” *Id.* The behavioral observation is used to modify the course of study that is in progress. *Id.* In short, the system collects data from a user, processes it, and presents information to the same user based on the outcome of processing such data. Such is properly characterized as either simulating mental activity or organizing human activity, which are abstract ideas.

Appellants’ effort to analogize the instant case to that of *DDR Holdings* is not persuasive. Appeal Br. 16. *DDR Holdings* acknowledged

that identifying the precise nature of an abstract idea is not always straightforward. *Id.* at 1257.

[T]hese claims stand apart because they do not merely recite the performance of some business practice known from the pre-Internet world along with the requirement to perform it on the Internet. Instead, the claimed solution is necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks.

Id. In particular, the patent at issue in *DDR Holdings* addressed a problem of retaining website visitors who would otherwise be transported away from a website by clicking on an advertisement hyperlink. *Id.*

[U]pon the click of an advertisement for a third-party product displayed on a host’s website, the visitor is no longer transported to the third party’s website. Instead, the patent claims call for an “outsource provider” having a web server which directs the visitor to an automatically-generated hybrid web page that combines visual “look and feel” elements from the host website and product information from the third-party merchant’s website related to the clicked advertisement. In this way, rather than instantly losing visitors to the third-party’s website, the host website can instead send its visitors to a web page on the outsource provider’s server that 1) incorporates “look and feel” elements from the host website, and 2) provides visitors with the opportunity to purchase products from the third-party merchant without actually entering that merchant’s website.

Id. at 1257–58 (footnote omitted). *DDR Holdings*, however, cautions that not all claims purporting to address Internet-centric challenges are eligible for patent. *Id.* at 1258, discussing *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 714 (Fed. Cir. 2014). “Unlike the claims in *Ultramercial*, the claims at issue here specify how interactions with the Internet are manipulated to yield a desired result — a result that overrides the routine and conventional sequence of events ordinarily triggered by the click of a hyperlink.” *Id.* In

contrast to *DDR Holdings*, the instant invention merely customizes the presentation of learning content to a user based on collecting and analyzing data obtained and derived from the user.

The prospect that Appellants' method uses a computerized "tool" does not render the claims less abstract. An abstract idea does not become non-abstract by limiting the invention to a particular technological environment. *Intellectual Ventures I*, 792 F.3d at 1367; *see also Affinity Labs of Texas, LLC v. DirecTV, LLC*, 838 F.3d 1253, 1259 (Fed. Cir. 2016) (Merely limiting the field of use of the abstract idea to a particular existing technological environment does not render the claims any less abstract); *see also Alice*, 134 S.Ct. at 2358 (the fact that a computer exists in the physical realm is beside the point). Unlike *Enfish*, the focus of the instant claims is not on improving a computer, but rather on a process for which computers are invoked merely as a tool. *See Enfish*, 822 F.3d at 1335–36. The Examiner is correct that the claims fall into a familiar class of claims directed to a patent-ineligible concept, namely, an abstract idea. Non-Final Action 4.

Turning to step two of the *Alice/Mayo* analysis, we look more precisely at what the claim elements add in terms of whether they identify an "inventive concept" in the application of the ineligible matter to which the claim is directed to. *See SAP Am., Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1167 (Fed. Cir. 2018). "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].'" *Alice*, 134 S.Ct. at 2357 (quoting *Mayo*, 566 U.S. at 77–78). Those "additional features" must be

more than well-understood, routine, conventional activity. *Mayo*, 566 U.S. at 79.

Appellants argue that the claimed invention amounts to “significantly more” than merely claiming an abstract idea. Appeal Br. 19–20.

In order to highlight this, Appellant previously amended its claims to include limitations requiring specific computer structure used to perform specific functions necessary to implement and use the technology. These limitations included the addition of a pointing device and/or a keyboard and the user's interactions with the claimed system through specific actions using that computer structure.

Id. at 20. Appellants argue that, although a computer mouse and keyboard may be, in some respects, considered conventional, they are nevertheless employed in an unconventional manner in the instant invention. *Id.* at 21. Appellants argue that generating “behavioral observations” to “modify the course of study in real time” is patentable subject matter. *Id.* at 22.

The system can then modify the course of study or learning environment itself to increase the intensity of the challenge or encourage the user to make adjustments to his or her behavior to increase the likelihood of a more effective outcome. In these ways, the claimed system uses the data it collects from hardware interactions to modify or “transform” the system into a more effective instructional environment. This collection of data concerning hardware interactions and real-time transformation process provides “significantly more” than the mere implementation of an abstract idea on a generic computer, thereby satisfying the test articulated in *Alice*.

Id. at 23.

In response, the Examiner points out that Appellants’ mouse and keyboard are not used in an unobvious or new manner. Ans. 8. The Examiner notes that key loggers and recording software utilized to collect computer input data have long existed in computer technology. *Id.* The

Examiner explains that the fact that Appellants' software retains the information collected by, for example, a mouse, while other programs ignore or do not save such data, is neither new nor novel. *Id.*

With respect to Appellants' argument regarding real-time modification of training material, the Examiner takes the position that such amounts to nothing more than merely changing the graphical data displayed in the graphical user interface. *Id.* at 11.

The input is routine and does not confer any unique properties or function to collected data. The physical embodiment of the display is not change the structure of the system remains unchanged and the program components function the same. All that is changed is what is output or displayed to a user at present.

Id. The Examiner emphasizes that the claims do not require a change in the nature of the substrate of the underlying, generic computer system. *Id.*

“Altering a stored test or lesson does not amount to altering the system itself.” *Id.* The Examiner construes “modify the course of study” and “in real time while the course of study is in progress” broadly but reasonably.

Id. According to the Examiner, “real-time” could be during any pause in the course of study. *Id.* Furthermore, a modification in the course of study could be something as simple as taking a break and then resuming the training at a later time. *Id.*

In reply, Appellants point to a number of paragraphs in the Specification as shedding light on the meaning of “real-time.” Reply Br. 12 (citing Spec. ¶¶ 52, 71, 73, 74, 98, 101, 132, 150). Appellants argue that, by accessing captured student behavioral data, the manner in which content is presented may be adjusted. Reply Br. 10. As an example, Appellants direct our attention to paragraphs 148–151 of the Specification, where Appellants

teach that an “Assistive Character” is displayed to relate “auxiliary information” to the student. *Id.*

However, what Appellants point to as the “something significantly more” is just implementation of the abstract idea itself using routine, conventional, computer technology. It does not matter how innovative Appellants’ abstract idea is. A claim for a new abstract idea is still an abstract idea. *Synopsys, Inc. v. Mentor Graphics Corp.*, 839 F.3d 1138, 1151 (Fed. Cir. 2016). We may assume that the techniques claimed are “[g]roundbreaking, innovative, or even brilliant,” but that is not enough for eligibility. *SAP Am.*, 898 F.3d at 1163 (quoting *Ass’n for Molecular Pathology v. Myriad Genetics, Inc.*, 569 U.S. 576, 591 (2013)).

Appellants’ limitations directed to software that: (1) transmits a course of study; (2) receives a course of study; (3) presents a course of study; (4) captures and analyzes data relating to interaction between a user and a course of study; and (5) modifies the course of study, merely tell a computer to “apply” the abstract idea of step 1. The Federal Circuit recently explained that:

Our recent abstract idea exception decisions likewise have stressed that a claimed invention must embody a concrete solution to a problem having “the specificity required to transform a claim from one claiming only a result to one claiming a way of achieving it.”

Interval Licensing LLC v. AOL, Inc., 896 F.3d 1335, 1343 (Fed. Cir. 2018) (citation omitted). Programming a computer to generate a “behavioral observation” and then “modify” a course of study based on the behavioral observation amounts to adding the words “apply it” to the abstract idea. *See Alice*, 134 S.Ct. at 2358. In that regard, we note that Appellants’ description of how to modify a course of study is vague, generalized and non-specific.

See generally Spec. In short, Appellants claim a result, not an innovative way to achieve it. *Interval Licensing*, at 1343.

The implementation of Appellants’ abstract idea is a software program that runs on generic computer equipment. Spec. ¶¶ 38–40. For example, the Specification discloses “a computer.” *Id.* ¶ 109. It uses “computer communications networks as is known in the art.” *Id.* ¶ 94. It uses a “mouse” for recording mouse clicks and hovering. *Id.* ¶ 117. It uses a computer “keyboard.” *Id.* ¶ 152. The computing device has “input elements” such as a keyboard and mouse, and “output elements” such as a display screen. ¶ 153. There is nothing in the description of the computer equipment and user interface components that purports to be a breakthrough or advancement in computer technology. *Alice*, 134 S.Ct. at 2359.

Furthermore, we are not persuaded that modifying the course of study based on a behavioral observation introduces an inventive concept. Although Appellants’ invention outputs more than just a report of the behavioral observation itself, we are mindful that computers are interactive in nature and routinely call up stored data, such as lesson plan materials, in response to user input. Thus, we conclude that using software to modify a course of study in the manner described and claimed by Appellants entails nothing more than well-understood, routine, conventional activity. *Mayo*, 566 U.S. at 79.

Essentially, all Appellants have done here is use generic computer data gathering, processing, and display technology to make on-line learning more interactive. As in *Alice*, “each step does no more than require a generic computer to perform generic computer functions.” *Alice*, 134 S.Ct.

Appeal 2017-003294
Application 13/540,359

at 2359. Accordingly, we sustain the Examiner's Section 101 rejection of claims 1, 5-7, 10-26, 28-34, 37-41 and 43-45.

DECISION

The decision of the Examiner to reject claims 1, 5-7, 10-26, 28 and 29 under section 112 as indefinite is affirmed.

The decision of the Examiner to reject claims 1, 5-7, 10-26, 28-34, 37-41 and 43-45 as being directed to patent-ineligible subject matter under section 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