UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/078,849	11/13/2013	Robert R. Friedlander	END920120007US6	5279

80878   7590   03/09/2018
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ART UNIT	PAPER NUMBER
1631	

NOTIFICATION DATE	DELIVERY MODE
03/09/2018	ELECTRONIC

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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Ex parte ROBERT R. FRIEDLANDER and JAMES R. KRAEMER[1]

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Appeal 2017-002021
Application 14/078,849
Technology Center 1600

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Before RICHARD J. SMITH, RYAN H. FLAX, and
RACHEL H. TOWNSEND, *Administrative Patent Judges*.

FLAX, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134(a) involving

claims directed to a computer program product for parallelization of

updating (or creating) synthetic events with genetic surprisal data. Claims

11–22 are on appeal as rejected under 35 U.S.C. § 101.[2] We have

jurisdiction under 35 U.S.C. § 6(b).

We affirm.

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[1] Appellants identify the Real Party in Interest as "International Business
Machines Corporation." Appeal Br. 1.
[2] Appellants state, "[a] notice of appeal [Appeal No. 2016-008135] has been
filed in Application Serial No. 13/870,324 on January 19, 2016 with an
appeal brief filed on February 25, 2016." Appeal Br. 1.

STATEMENT OF THE CASE

The Specification states that the invention "provide[s] an automated method, apparatus, and computer usable program code for selecting individuals and their genetic surprisal data for a control cohort through data parallelization." Spec. ¶ 24.

Claims 11, 16, 17, and 22 are the independent claims. Claim 11 is representative and is reproduced below:

> 11. A computer program product for parallelization of updating synthetic events with genetic surprisal data representing a genetic sequence of an organism, wherein program instructions are stored on one or more computer-readable storage devices and are executed on a computer, the computer program product comprising:
>
> program instructions, stored on at least one of the one or more storage devices, to receive a synthetic event and associated metadata from a user, wherein the metadata comprises at least one genetic surprisal data attribute;
>
> program instructions, stored on at least one of the one or more storage devices, to divide the synthetic event into cohort parts and assign the cohort parts and associated synthetic event metadata to one of the plurality of computer processing elements arranged in parallel; and
>
> within each processing element of the plurality of computer processing elements arranged in parallel, each of the processing elements assigned the cohort parts and associated synthetic event metadata each performing the following program instructions, stored on at least one of the one or more storage devices, concurrently to:
>
>> search data records of patients for genetic surprisal data and store matches of the data records in a repository;

generate a cluster comprising a centroid by populating the cluster based on all of the matches of the data records;

calculate a new centroid for each cluster;

calculate a Euclidean distance in multiple dimensions for each match of data records to the new centroid for each cluster;

reassign each match of data to the new centroid of each cluster based on the shortest calculated Euclidean distance to the new centroid for each cluster; and

determine at least one cohort part, a control cohort or a treatment cohort, from the clusters, and based on the associated metadata from the user and store the at least one cohort part in a repository;

program instructions, stored on at least one of the one or more storage devices, to retrieve the cohort parts from the repository and recombine the cohort parts into updated synthetic events based on the metadata and store the updated synthetic events in the repository.

Appeal Br. 22–23 (Claims App'x).

The following rejection is appealed:

Claims 11–22 stand rejected under 35 U.S.C. § 101 as directed to patent-ineligible subject matter. Final Action 3.

DISCUSSION

We adopt the Examiner's findings of fact, reasoning on scope and content of the claims and prior art, and conclusions set out in the Final Action and Answer. Final Action 3–11; Answer 2–4. Only those arguments made by Appellants in the Appeal Brief and properly presented in the Reply Brief have been considered in this Decision. Arguments not so presented in the Briefs are waived. *See* 37 C.F.R. § 41.37(c)(1)(iv) (2015); *see also Ex*

parte Borden, 93 USPQ2d 1473, 1474 (BPAI 2010) (informative) ("Any bases for asserting error, whether factual or legal, that are not raised in the principal brief are waived.").

"[T]he examiner bears the initial burden, on review of the prior art *or on any other ground*, of presenting a *prima facie* case of unpatentability. If that burden is met, the burden of coming forward with evidence or argument shifts to the applicant." *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992) (emphasis added).

"Phenomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work." *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 71 (2012) (quoting *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)). Claims directed to *nothing more* than abstract ideas (such as mathematical algorithms), natural phenomena, and laws of nature are not eligible for patent protection. *Diamond v. Diehr*, 450 U.S. 175, 185 (1981); *accord* MPEP § 2106 (II) (discussing *Diehr*).

In analyzing patent-eligibility questions under 35 U.S.C. § 101, the Supreme Court instructs us to "first determine whether the claims at issue are directed to a patent-ineligible concept." *Alice Corp. Pty. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2355 (2014). If the initial threshold is met, we then move to a second step and "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.* (quoting *Mayo*, 566 U.S. at 97).

The Federal Circuit has "recognize[d] that defining the precise abstract idea of patent claims in many cases is far from a 'straightforward' exercise." *Synopsys, Inc. v. Mentor Graphics Corp.*, 839 F.3d 1138, 1150 (Fed. Cir. 2016) (quoting *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1257 (Fed. Cir. 2014)). However, "we continue to 'treat[ ] analyzing information by steps people [could] go through in their minds, or by mathematical algorithms, without more, as essentially mental processes within the abstract-idea category.'" *Synopsys*, 839 F.3d at 1146–47 (quoting *Electric Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1354 (Fed. Cir. 2016) (citations omitted); *see also Electric Power Grp.*, 830 F.3d at 1353 ("collecting information, analyzing it, and displaying certain results of the collection and analysis" "fall[s] into a familiar class of claims 'directed to' a patent-ineligible concept," that of the abstract idea). The Federal Circuit has recognized that "a claim for a *new* abstract idea is still an abstract idea." *Synopsys*, 839 F.3d at 1151.

The Federal Circuit, in *Intellectual Ventures I LLC v. Capital One Financial Corp.*, 850 F.3d 1332 (Fed. Cir. 2017), where the claims were held to be directed to a computer programmed to edit XML documents, "conclude[d] [the claims were] . . . at their core, directed to the abstract idea of collecting, displaying, and manipulating data." *Id.* at 1339–40. Even though the patent at issue in *Intellectual Ventures I* indicated its invention provided a concrete solution to a particular problem in computer programming, it "at best, . . . limit[ed] the invention to a technological environment for which to apply the underlying abstract concept," which does "not render an otherwise abstract concept any less abstract." *Id.* at

1340 (citing *Affinity Labs of Tex., LLC v. DIRECTV, LLC*, 838 F.3d 1253, 1259 (Fed. Cir. 2016)). Under step two of the *Alice* analysis, the court in *Intellectual Ventures I* held that claims reciting generic computer components or elements and their functions, e.g., organizing, mapping, identifying, defining, detecting, and modifying, "merely describe the functions of the abstract idea itself" and are not sufficient to supply significantly more than the abstract idea so as to confer patent-eligibility. *Id.* at 1341.

The Federal Circuit has established in several other cases that collecting, classifying, storing, and organizing data, regardless of whether such data manipulations are limited to a particular environment, is an abstract idea and, without more, is not patent eligible. *See, e.g., In re TLI Communications LLC Patent Litigation*, 823 F.3d 607 (Fed. Cir. 2016) (collecting and organizing data in the form of digital images is abstract and patent ineligible and using computer systems in their generic ways do not add an inventive concept); *Content Extraction and Transmission LLC v. Wells Fargo Bank, Nat'l Ass'n*, 776 F.3d 1343 (Fed. Cir. 2014) (extracting data from documents, recognizing information therefrom, and storing the information is abstract).

The Examiner determined, pursuant to *Alice* step one, "claim(s) 11-22 is/are directed to the abstract ideas of dividing metadata into cohort parts, search data records, generating clusters, analyzing clusters using centroid analysis, and updating synthetic events." Final Action 3. Pursuant to *Alice* step two, the Examiner determined, "[t]he claim(s) does/do not include additional elements that are sufficient to amount to significantly more than

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the judicial exception (i.e. Step 2B of the Guidelines) because executing the algorithms on a computer is routine and conventional in the prior art." *Id.* The Examiner further explained that "the abstract idea comprises mathematical relationships of manipulating data," which the Examiner determined was "analogous to the fact pattern in the abstract ideas in the claims of *Electric Power Group, LLC. V. Alstom S.A., Alstom Grid, Inc., Psymetrix Ltd., Alstom Limited* (CAFC 2015-1778)." Final Action 3–4; Answer 3. The Examiner's determinations are reasonable and we have considered Appellants' arguments and find them unpersuasive.

Appellants argue the claims are not directed to an abstract idea because they do not fall under one of the four classifications provided by the USPTO: fundamental economic practice; idea of itself; methods of organizing human activity; or mathematical relationships/formulas. Appeal Br. 10–11. This is not persuasive. The claims are directed to a computer-based (or network-based) implementation of collecting, organizing, and comparing/analyzing data (in the form of unexpected genetic code differences of organisms, i.e. "surprisal data") (something that could be done by hand and is merely the act of collecting information). The organization and analysis involve mathematical relationships, such as populating clusters based on matches of data records, calculating centroids of the clusters and Euclidean distances for data matches and centroids. As discussed above, case law establishes that manipulation of data, such as is required by the present claims, is an abstract idea.

Appellants argue the claims recite something "significantly more" than the abstract idea so as to provide an inventive concept, per an analysis under *Alice* step two. *Id.* at 12. Appellants argue the

> claims are all tied to a computer program product or computer system for parallelization of updating synthetic events with genetic surprisal data representing a genetic sequence of an organism or creating synthetic events with genetic surprisal data representing a genetic sequence of an organism, which in and of itself recites more than executing an algorithm on a computer.

Id. Appellants also point to the claimed "plurality of computer processing elements arranged in parallel" and contend they are each programed to search data records, store matches in data records, generate clusters of data comprising centroids, calculate new centroids for each cluster, calculate Euclidian distances, reassign matched data to new centroids, and determine cohorts, arguing this is also something significantly more that transforms the claims into patent-eligible subject matter. *Id.*

As discussed, the steps and concepts identified are merely the manipulation and organization of data via mathematical algorithms, using well known, routine, conventional computer/data related means. Manipulating the data using parallel processing may improve the speed at which the data is processed, but the claims do not involve an improvement in computer-functionality. As the case law makes clear, the use of computers to perform well known data organization and analytics cannot supply the *something more* to confer patent-eligibility to an otherwise ineligible claim. Simply put, "[i]nformation as such is an intangible," and collecting it and analyzing it by mathematical algorithms without more is abstract, and storing, searching, or presenting that information with routine

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tools "is abstract as an ancillary part of such collection and analysis." *Electric Power Grp.*, 830 F.3d at 1353–54. The claims merely require selection of information, manipulation of that data for analytical purposes, using a conventional computer system or network programmed to do so; such steps do not transform the abstract ideas of the claims into a patent-eligible invention. *See, e.g., id.* at 1355.

For the reasons set forth above, we affirm the rejection.

SUMMARY

The rejection of the claims as directed to patent-ineligible subject matter is affirmed.

TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED