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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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Ex parte HUGH SALAMON and KEN D. YAMAGUCHI

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Appeal 2019-003377
Application 14/719,246
Technology Center 2100

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Before JOSEPH L. DIXON, DAVID M. KOHUT, and
JON M. JURGOVAN, *Administrative Patent Judges*.

KOHUT, *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellant[1] appeals from the
Examiner's decision to reject claims 1–20. We have jurisdiction under
35 U.S.C. § 6(b).

We AFFIRM.

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[1] We use the word "Appellant" to refer to "applicant" as defined in
37 C.F.R. § 1.42(a). Appellant identifies the real party in interest as Hugh
Salamon and Ken D. Yamaguchi (the inventors). Appeal Br. 1.

INVENTION

Appellant's invention relates to systems and methods for searching large data collections to generate large numbers of statistically significant findings, and ranking and querying statistical analysis results of database contents to populate search engine query results with novel content. Spec. ¶ 1, Abstract.

Claims 1 and 10 are illustrative of argued subject matter.

1.   A system for searching and analyzing data, comprising:

an engine configured to rank and query statistical analysis results of database contents that include records, the database contents comprising:

a scalar data field for each of the records;

a categorization of each of the records or a network of relationships among the records;

natural language that describes the scalar data field and the categorization;

a statistical test for each of the records, category of the records, or vertex of the records in the network;

a rank of results of the statistical tests;

a ranking of the test results across multiple analyses of data in which results are statistical test computations normalized by the rank of the results of the statistical tests and normalized by strength of effect of the statistical test computations; and

a final ranking of findings consisting of the rank of the record, category, or network finding, adjusted for query term hits on the natural language; and

a processor configured to receive a search engine query input that includes the query term and to provide a search engine query result to the user based on the final ranking.

10. A system for searching and analyzing data, comprising:

a memory storing instructions therein; and

a processor configured to receive a search engine query input by a user that includes a query term, the processor being configured to execute the instructions and thereby:

retrieve findings from a plurality of different data sources each storing a plurality of records each including a text field, the findings being based on a match of the query term with the text field,

calculate a statistical test result of the findings, each test result including a p-value and a strength of effect,

calculate a weighted test result using the strength of effect,

rank the weighted test results from largest to smallest,

calculate a relevance score for each weighted test result based on the ranking,

normalize the relevance scores, and

rank query results to be provided to the user in response to the search engine query by ranking the normalized relevance scores from largest to smallest.

Appeal Br. A–D (Claims App.).

<div align="center">REJECTION[2]</div>

Claims 1–20 stand rejected under 35 U.S.C. § 102(a)(1) as anticipated by Kupershmidt (US 2007/0162411 A1; July 12, 2007). Final Act. 7–12.

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[2] Claims 1–20 were rejected under 35 U.S.C. § 101 as being directed to patent-ineligible subject matter. Final Act. 2–6. However, this rejection was withdrawn in the Examiner's Answer and is no longer pending on appeal. Ans. 3.

OPINION

Claims 1–9

With respect to claim 1, Appellant argues Kupershmidt does not disclose

> database contents comprising: a scalar data field for each of the records; a categorization of each of the records or a network of relationships among the records; natural language that describes the scalar data field and the categorization; . . . and *a final ranking* of findings consisting of the rank of the record, category, or network finding, *adjusted for query term hits on the natural language*.

Appeal Br. 5–6. Appellant argues, although Kupershmidt presents a user's query results in a ranked order, "Kupershmidt provides no disclosure that the ranking is adjusted in using the user query," and "[q]uery term hits are never mentioned in Kupershmidt, much less that the ranking presented in response to the user's query is in any way adjusted for query terms hits on natural language or on anything else." Appeal Br. 6; Reply Br. 3. More particularly, Appellant asserts Kupershmidt's ranking is based only on statistics (correlation scores) that were previously computed during the Knowledge Base generation process of Figure 1 "before any query has been input" and "*before the query term is known* and thus also before any hits on the query term are known." Appeal Br. 6; Reply Br. 2–3 (citing Kupershmidt ¶¶ 162–164, Figs. 1 and 13A).

Appellant's arguments do not persuade us of Examiner error. The Examiner finds, and we agree, that Kupershmidt's processor receives a query input that includes a query term, and provides a search engine query result to the user based on a final ranking, as required by claim 1. Ans. 3–4 (citing Kupershmidt ¶ 164, Fig. 13A (showing receipt of a query input at

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step 1301, and output of a search engine query result to user at step 1307, based on a final ranking from step 1305)); *see* Kupershmidt ¶ 164 ("as indicated at block **1305** in FIG. **13A**, a comparison of the query Feature Set against all other Feature Sets in the field of search is used to produce a ranked list of the other Feature Sets," and "[t]his ranked list can be used to display the other Feature Sets from the field of search in descending order, with the most highly correlated (or otherwise most relevant) other Feature Set listed first, at the top of the list," "the resulting ranked list . . . presented as a result of the query via a user interface.").

Appellant's arguments that Kupershmidt is deficient (because Kupershmidt's ranking is based only on statistics pre-computed "*before any query has been input*" and the ranking is not "*adjusted in using the user query*") are not commensurate with the scope of claim 1. *See* Appeal Br. 6 and Reply Br. 2–3 (emphases added); *see also In re Self*, 671 F.2d 1344, 1348 (CCPA 1982) ("[A]ppellant's arguments fail from the outset because . . . they are not based on limitations appearing in the claims."); *In re Hiniker Co.*, 150 F.3d 1362, 1369 (Fed. Cir. 1998) ("[The] proffered facts . . . are not commensurate with the claim scope and are therefore unpersuasive."). Claim 1 recites "a final ranking of findings [in the database's contents] consisting of the rank of the record, category, or network finding, adjusted for *query term hits* on the natural language" (emphasis added). However, claim 1 does not require the statistics of the claimed "final ranking . . . adjusted for query term hits" to be *calculated in real-time based on a user's input*, such that the claim does not preclude a "final ranking" that is based on *pre-computed statistics* (e.g., statistics pre-computed for curated, pre-selected query terms, as in Kupershmidt). Ans. 4; *see* Kupershmidt ¶ 164.

Claim 1 is therefore broad enough to include a "final ranking of findings" that is *pre-computed* based on *possible query terms* (query terms that are made available to users for searching after the pre-computed statistics of final rankings are completed, as in Kupershmidt, *see* ¶¶ 162–164). More particularly, as the Examiner finds, Kupershmidt's "correlation scores" between Feature Sets and Groups disclose the claimed "final ranking." Final Act. 8 (citing Kupershmidt ¶¶ 111–112, 164–165); Ans. 3–4 (citing Kupershmidt Fig. 1 (step 108–Perform correlation scoring of each imported Feature Set to all other Feature Sets and Feature Groups in the Knowledge Base)). Thus, Kupershmidt's Knowledge Base contents include *final rankings of findings* consisting of ranks of records, categories, or network findings (*correlation scores* between Feature Sets and Groups, *see* Kupershmidt ¶¶ 111–112, 127, 164) *adjusted for query term hits* (*identified instances of* "*overlapped features*" *or terms* "*in common*" *between Feature Sets and Groups*, such as instances of overlapping signaling pathways, genes, and other features that become user-searchable after the Knowledge Base is generated, *see id.* ¶¶ 64, 109 (emphasis added), 111 (emphasis added), 127 (emphasis added), 162, 164) *on the natural language* (*tags and keywords identifying features of Feature Sets*, *see id.* ¶¶ 57, 66, 106, 162), as recited in claim 1.

Accordingly, we sustain the Examiner's anticipation rejection of independent claim 1, and dependent claims 2–9 not separately argued.

Claims 10–20

With respect to independent claim 10, Appellant argues Kupershmidt does not disclose

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> the processor being configured to execute the instructions and thereby: retrieve findings from a plurality of different data sources each storing a plurality of records each including a text field, the findings being based on a match of the query term with the text field, [and] *calculate a statistical test result of the findings*, each test result including a p-value and a strength of effect.

Appeal Br. 6; *see also* Reply Br. 4. Appellant argues Kupershmidt does not "calculat[e] a statistical test result of findings that are based on a match of a query term with a text field" and does not "calculate a weighted test result using the strength of effect," because Kupershmidt's statistical calculations "do not occur after a query is received." Appeal Br. 6–7. Instead, Kupershmidt's statistical calculations are pre-computed during the Knowledge Base production process of Figure 1 "before any query is or can be submitted by a user." *Id.* According to Appellant, "the only calculation of any statistics in Kupershmidt occurs before any query is received and therefore necessarily does not and cannot be a calculation of findings that are only known after a search engine query is input by a user." *Id.*

Appellant's arguments do not persuade us of Examiner error. The Examiner finds, and we agree, that Kupershmidt's processor receives a search engine query input by a user that includes a query term, and ranks query results to be provided to the user in response to the search engine query, as required by claim 10. Ans. 5 (citing Kupershmidt ¶ 162, Fig. 13A (showing receipt of a search engine query input by a user at step 1301, and output of ranked query results to the user at step 1307, in response to the search engine query)); Final Act. 10–11 (citing Kupershmidt ¶¶ 164–165).

Appellant's arguments (that Kupershmidt does not disclose the claimed calculations because "the only calculation of any statistics in

Kupershmidt occurs *before any query is received* and therefore necessarily *does not and cannot be a calculation of findings that are only known after a search engine query is input by a user*") are not commensurate with the scope of claim 10. *See* Appeal Br. 7 (emphases added). Claim 10 does not recite that the "findings" (retrieved and used in the claimed calculations) are based on a match of a query term *obtained from a query previously submitted by a user*, the claim does not require the "findings" to be "only known after a search engine query is input by a user," and the claim does not require the claimed statistical and weighted test calculations *to occur at the time the user submits a query*, as Appellant argues. *See id.*

Accordingly, we conclude claim 10 is broad enough to include calculations (of statistical and weighted test results) that are *pre-computed based on curated, pre-selected query terms* (terms that are made available to users for searching, after pre-computing the statistics of the records in a database, as in Kupershmidt). Ans. 5 (citing Kupershmidt ¶¶ 77, 80); Final Act. 10–11 (citing Kupershmidt ¶¶ 72, 121–127, 162, Fig. 9B). More particularly, Kupershmidt *retrieves findings*, *the findings being based on a match* (identified instances of "overlapped features" or terms "in common" between Feature Sets and Groups, such as instances of overlapping signaling pathways, genes, and other features, *see* Kupershmidt ¶¶ 64, 109, 111, 127) *of the query term* (e.g., a signaling pathway, gene, or other Feature Set's feature that becomes user-searchable after the Knowledge Base is generated, *see id.* ¶¶ 64, 66, 68, 162, 164) *with text fields of records* (records in Kupershmidt's Feature Sets and Groups), as required by claim 10. Kupershmidt then performs the claimed calculations (of statistical and

weighted test results) based on the findings, to determine correlation scores between Feature Sets and Groups. *See id.* ¶¶ 111–112, 121–127.

Accordingly, we sustain the Examiner's anticipation rejection of independent claim 10. We also sustain the Examiner's anticipation rejection of independent claim 15, reciting features similar to claim 10, and argued for the same reasons as claim 10. Appeal Br. 7; *see* claim 15 ("receiving at a processor a search engine query input by a user that includes a query term," "the processor retrieving findings from a plurality of different data sources each storing a plurality of records each including a text field, the findings being based on a match of the query term with the text field," and "the processor calculating a statistical test result of the findings, each test result including a p value and a strength of effect"); *see also Altiris, Inc. v. Symantec Corp.*, 318 F.3d 1363, 1369–70 (Fed. Cir. 2003) (where the language of method claims did not impose a specific order on the performance of the method steps, finding reversible error to interpret the method claims as requiring a specific order even though the patent's Specification disclosed only a single embodiment). We further sustain the Examiner's anticipation rejection of dependent claims 11–14 and 16–20, not separately argued. *See* Appeal Br. 7.

CONCLUSION

The Examiner's decision rejecting claims 1–20 under 35 U.S.C. § 102(a)(1) is affirmed.

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/ Basis	Affirmed	Reversed
1–20	102(a)(1)	Kupershmidt	1–20	

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). *See* 37 C.F.R. § 1.136(a)(1)(iv).

<u>AFFIRMED</u>