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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte DILEK HAKKANI-TUR, YUN-CHENG JU,
GEOFFREY G. ZWEIG, AND GOKHAN TUR¹

Appeal 2017-010766
Application 14/846,486
Technology Center 2600

Before ALLEN R. MacDONALD, ROBERT E. NAPPI, and JAMES W.
DEJMEK, *Administrative Patent Judges*.

NAPPI, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134(a) from the Examiner's final rejection of claims 1 through 20. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

¹ According to Appellants, the real party in interest is Microsoft Technology Licensing, LLC. App. Br. 3.

INVENTION

Appellants' disclosed invention is directed to a system that trains a spoken language understanding (SLU) classifier. The system makes use of a corpus of user utterances, semantically parses utterances and produces a parse graph representing all user utterances. The user utterances graph is clustered into intent-wise homogeneous groups of user utterances which are then used to train the SLU classifier. *Abstract.* Claim 1 is representative of the invention and reproduced below.

1. A system for training a spoken language understanding (SLU) classifier, comprising:
 - one or more computing devices, said computing devices being in communication with each other via a computer network whenever there is a plurality of computing devices; and
 - a computer program having program modules executable by the one or more computing devices, the one or more computing devices being directed by the program modules of the computer program to,
 - receive a corpus of user utterances,
 - for each of the user utterances in the corpus, semantically parse the user utterance, and
 - represent the result of said semantic parsing as a rooted semantic parse graph,
 - combine the parse graphs representing all of the user utterances in the corpus into a single corpus graph that represents the semantic parses of the entire corpus and comprises a root node that is common to the parse graph representing each of the user utterances in the corpus,
 - cluster the user utterances in the corpus into intent-wise homogeneous groups of user utterances, said clustering comprising finding subgraphs in the corpus graph that represent different groups of user utterances, each of said different groups having a similar user intent, each of the subgraphs being more specific than the root node alone and more general than the full semantic parses of the individual user utterances,

use the intent-wise homogeneous groups of user utterances to train the SLU classifier, and output the trained SLU classifier.

REJECTION AT ISSUE²

The Examiner has rejected claims 1 through 20 under 35 U.S.C. § 101 for being directed to patent-ineligible subject matter. Answer 2–4.

PRINCIPLES OF LAW

Patent-eligible subject matter is defined in 35 U.S.C. § 101 of the Patent Act, which recites:

Whoever 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.

There are, however, three judicially created exceptions to the broad categories of patent-eligible subject matter in 35 U.S.C. § 101: laws of nature, natural phenomena, and abstract ideas. *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2354 (2014); *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 70 (2012). Although an abstract idea itself is patent ineligible, an application of the abstract idea may be patent eligible. *Alice*, 134 S. Ct. at 2355. Thus, we must 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.* (citing *Mayo*, 566 U.S. at 78–80). The

² Throughout this Decision we refer to the Appeal Brief filed May 19, 2017, Reply Brief filed August 14, 2017, Final Office Action mailed January 5, 2017, and the Examiner’s Answer mailed July 28, 2017.

claim must contain elements or a combination of elements that are “sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [abstract idea] itself.” *Id.* (citing *Mayo*, 566 U.S. at 72–73).

The Supreme Court sets forth a two-part “framework for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts.” *Id.* at 2355. First, we determine whether the claims at issue are directed to one of those patent-ineligible concepts. *Mayo*, 566 U.S. at 76–77. If so, we then ask, “[w]hat else is there in the claims before us?” *Id.* at 77–78. To answer that question, we 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.* The court has described step two of this 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.” *Id.* at 71–73.

Claims directed to “limited rules, in a process specifically designed to achieve an improved technical result in conventional industry practice” are not directed to an abstract idea. *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299, 1316 (Fed. Cir. 2016).

ANALYSIS

We have reviewed Appellants' arguments in the Briefs, the Examiner's rejections, and the Examiner's response to Appellants' arguments. Appellants' arguments have persuaded us of error in the Examiner's conclusion that the claims are directed to patent-ineligible subject matter.

Appellants argue on pages 10 through 17 of the Appeal Brief and pages 2 through 7 of the Reply Brief that the precepts of the *McRO* analysis demonstrate that independent claim 1 is directed to patent-eligible subject matter. Specifically, Appellants argue that claim 1 includes an utterance intent clustering limitation that amounts to significantly more than an abstract idea.³ Appellants argue:

In the *McRO* decision the court explained that “. . . We have previously cautioned that courts ‘must be careful to avoid oversimplifying the claims’ by looking at them generally and failing to account for the specific requirements of the claims . . . In addition, in the *McRO* decision the court further explained

³ Appellants refer to the limitations “for each of the user utterances in . . . [a] corpus [of user utterances], semantically parse the user utterance, and represent the result of said semantic parsing as a rooted semantic parse graph, combine the parse graphs representing all of the user utterances in the corpus into a single corpus graph that represents the semantic parses of the entire corpus and comprises a root node that is common to the parse graph representing each of the user utterances in the corpus, cluster the user utterances in the corpus into intent-wise homogeneous groups of user utterances, said clustering comprising finding subgraphs in the corpus graph that represent different groups of user utterances, each of said different groups having a similar user intent, each of the subgraphs being more specific than the root node alone and more general than the full semantic parses of the individual user utterances” as the utterance intent clustering limitation. App. Br. 10–11. For the sake of brevity, we adopt this shorthand.

that “. . . Whether at step one or step two of the Alice test, in determining the patentability of a method, a court must look to the claims as an ordered combination, without ignoring the requirements of the individual steps . . .” (emphasis added). In the *McRO* decision the court further clarified these issues by explaining that “. . . The preemption concern arises when the claims are not directed to a specific invention and instead improperly monopolize ‘the basic tools of scientific and technological work’”, “[w]e therefore look to whether the claims . . . focus on a specific means or method that improves the relevant technology . . .” (emphasis added).

App. Br. 11 (emphases omitted). Appellants assert that similar to *McRO*, appealed claim 1 focuses on a specific improvement to a spoken language understanding subsystem that is not used by other spoken language understanding systems. App. Br. 12. Further, Appellants argue that the Specification describes how the utterance-clustering feature of claim 1 is used to determine user intent in a manner not found using conventional spoken dialog computing systems. App. Br. 15.

In response to Appellants’ arguments, the Examiner states:

The fact pattern established in the independent claim 1, does not mirror the *McRO v Bandai et al*, wherein a “set of rules” previously performed by human animators (non-calculation in nature) were now automated via a computer (*McRO*, pp 24–25, and in contradistinction, *Flook*, *Bilski*, and *Alice* performing computer automated processes in the same way as previous methods, as noted in *McRO*).

Answer 4 (emphasis omitted). Further, the Examiner finds that the claimed clustering is a mathematical calculation, where the improvement is to the calculation itself and not an improvement to the computer or other technology. Answer 5. The Examiner responds to Appellants’ assertion that the claims are an improvement to the SLU classifiers by finding that SLU

classifiers are themselves mathematical classifiers, and that the limitations directed to training a SLU classifier are merely an intended use and do not amount to significantly more than the abstract idea. Answer 3, 5 (citing paragraphs 21, 27 through 29, and Figure 4 as showing that SLUs are mathematical calculations).

We disagree with the Examiner. Initially, we note that paragraphs 21, 27 through 29 and Figure 4, cited by the Examiner to show that the SLU is a mathematical algorithm are not discussing the SLU, but rather the method of developing the parsing graph used to train the SLU. Thus, although the cited paragraphs may describe mathematical algorithms (set theory algorithms), they do not support the Examiner's finding that SLUs are mathematical algorithms. Additionally, the limitation that the intent-wise homogeneous groups are used to train the SLU classifier and the limitation directed to outputting a trained SLU classifier, are more than just field of use limitations.

Further, we disagree with the Examiner's statement that claim 1, does not mirror the reasoning applied in *McRO*. In *McRO*, the court found that a system of automated facial animation through the use of rules, rather than artists setting weights, to automate tasks that humans perform is directed to patent-eligible subject matter. *McRO*, 837 F.3d at 1313. The court found that the process performed by human animators is not the same as that as the rules-based process recited in the claimed automation, as the human process is driven by subjective determinations. *McRO*, 837 F.3d at 1314. Thus, the court in *McRO* held that it was the rules which improved the technological process, and, that by incorporating the specific rules, the claim is limited to a specific process for animation that is not an abstract idea. *McRO*, 837 F.3d

at 1315–16. We consider the instant claim limitation to be similar to the claim limitations at issue in *McRO*. Although the utterance intent clustering limitation involves mathematical operations (*see, e.g.*, Specification paragraphs 29 and 38), similar to *McRO*, the Examiner has not shown that the utterance intent clustering limitation is the same as conventionally performed by person (paragraphs 14 through 16 of Appellants’ Specification describe the manual process as being different from the claimed intent clustering limitation). Further, similar to *McRO*, the claims do not merely organize information into a new form. Rather, the utterance intent clustering limitation recites a specific order of steps (parsing utterances, combining all utterances into one graphs with a common root node, and then clustering into intent-wise homogeneous groups) that renders the information in a specific format used to create the desired results. *McRO*, 837 F.3d at 1315. The utterance intent clustering limitation, which produces intent-wise homogeneous groups that are then used to train the SLU classifier, is improving a technological process, as it is improving a specific process by which an SLU classifier is trained. Accordingly, we do not sustain the Examiner’s rejection of independent claim 1 and dependent claims 2 through 12 as being directed to patent ineligible subject matter.

Appellants’ arguments directed to independent claims 13 and 20 present similar arguments as those discussed with respect to claim 1. App. Br. 17–30. The Examiner relies upon the same response discussed above to support the rejection of independent claims 13 and 20. Answer 5–6. Each of independent claims 13 and 20 recite utterance intent clustering limitations similar to those discussed above in claim 1. Accordingly, we do not sustain

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the Examiner's rejection of claims 13 through 20 for the same reasons as discussed above with respect to claim 1.

DECISION

We reverse the Examiner's rejections of claims 1 through 20 under 35 U.S.C. § 101.

REVERSED