UNITED STATES PATENT AND TRADEMARK OFFICE

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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 DILEK HAKKANI-TUR, YUN-CHENG JU,
GEOFFREY G. ZWEIG, AND GOKHAN TUR[1]

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

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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.

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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 ISSUE[2]

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

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[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

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[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

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