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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* ALEXANDER PAUL SCHULTZ, BRIAN PIEPGRASS,  
CHING-CHIH WENG, DANIEL FERRANTE, DEEPTANSHU VERMA,  
PETER MARTINAZZI, THOMAS ALISON, and ZIQING MAO

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Appeal 2017-003955  
Application 13/659,695  
Technology Center 3600

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Before MAHSHID D. SAADAT, CHARLES J. BOUDREAU, and  
JASON M. REPKO, *Administrative Patent Judges*.

REPKO, *Administrative Patent Judge*.

DECISION ON APPEAL

## STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner’s rejection of claims 1–5, 7–12, and 24–33.<sup>1</sup> App. Br. 5, 18.<sup>2</sup> Claim 6 was canceled. Claims 13–23 were withdrawn from consideration. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

## THE INVENTION

Appellants’ invention suggests potential connections to users within a social-networking system. Spec. ¶ 1. According to the Specification, social-networking systems value user connections because better-connected users tend to increase the systems’ use. *Id.* ¶ 2. Increased use, in turn, improves user-engagement and advertising opportunities for the social network. *Id.*

The Specification explains that the invention helps users make meaningful and efficient connections with new contacts. *Id.* ¶ 4. One embodiment computes a “friendship value” between the user and a potential new contact—i.e., a “candidate user”—from (1) the friendship’s value to the user, (2) the friendship’s value to the candidate user, and (3) the resulting friendship’s probability. *Id.* ¶¶ 5, 17. From the computed friendship value, the embodiment then determines a change in the user’s engagement in the social network resulting from a successful friendship with the candidate

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<sup>1</sup> Appellants identify the real party in interest as Facebook, Inc. App. Br. 2.

<sup>2</sup> Throughout this opinion, we refer to the Final Rejection (“Final Act.”) mailed September 11, 2015; the Advisory Action (“Adv. Act.”) mailed December 10, 2015; the Appeal Brief (“App. Br.”) filed April 11, 2016; the Examiner’s Answer (“Ans.”) mailed November 3, 2016; and the Reply Brief (“Reply Br.”) filed January 3, 2017.

user. *Id.* ¶ 17. The system then suggests a connection to the user using this information. *Id.* In another embodiment, the system ranks candidate users using the friendship value. *Id.* ¶ 19.

Claim 1 is reproduced below:

1. A computer-implemented method comprising:

determining a friendship value between a user and a candidate user, the friendship value computed as a function of one or more of: a value of a friendship to the user, a value of the friendship to the candidate user, or a probability of the friendship resulting between the user and the candidate user; and

computing a difference between a current engagement level of the user with a social network and a projected engagement level of the user with the social network,

wherein the difference is computed using a function or mapping that assumes a successful connection between the user and the candidate user and provides projected engagement levels with the social network based on the computed friendship value of the assumed successful connection.

#### THE EVIDENCE

The Examiner relies on the following as evidence:

Jagadish et al.	US 2009/0271370 A1	Oct. 29, 2009
Carmel et al.	US 2010/0281035 A1	Nov. 4, 2010

#### THE REJECTIONS

Claims 1–5, 7–12, and 24–33 stand rejected under 35 U.S.C. § 101 as directed to patent-ineligible subject matter. Final Act. 8–12.

Claims 1–5, 7–12, and 24–33 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Jagadish and Carmel. Final Act. 12–27.

## CLAIM AMENDMENTS

After the Final Rejection, Appellants proposed amendments to claims 5 and 32.<sup>3</sup> *See* Response to Final Office Action under 37 C.F.R. § 1.116, filed Dec. 10, 2015. In particular, Appellants proposed adding (1) the word “user” to claim 5 after each time the word “candidate” appears and (2) the word “non-transitory” to claim 32 before the phrase “computer-readable storage medium” in the preamble. *Id.* at 3, 9. The Examiner did not enter these amendments. *See* Adv. Act. In Appendix A of Appellants’ Brief, claims 5 and 32, however, contain the amendments that were denied entry. *See* App. Br. 28, 34. For the purpose of this appeal, we will use the last entered amendment under 37 C.F.R. § 1.121(c)—i.e., the claims filed on May 13, 2015.

## THE REJECTION UNDER 35 U.S.C. § 101

### I

The Supreme Court’s two-step framework guides our analysis of subject-matter eligibility under § 101. *See Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2355 (2014). According to step one, “[w]e must first determine whether the claims at issue are directed to a patent-ineligible concept,” such as an abstract idea. *Id.* *Alice* step one “calls upon us to look at the ‘focus of the claimed advance over the prior art’ to determine if the claim’s ‘character as a whole’ is directed to excluded subject matter.”

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<sup>3</sup> The Examiner objects to claim 5 because the term “the candidate” lacks an antecedent basis in the claim. Final Act. 8. The Examiner has not indicated that this objection has been withdrawn.

*Affinity Labs of Tex., LLC v. DIRECTV, LLC*, 838 F.3d 1253, 1257 (Fed. Cir. 2016).

The Examiner concludes that independent claims 1, 24, and 32 are directed to an abstract idea. Final Act. 8. The Examiner explains that the claims are similar to those involving collecting and analyzing information that have previously been held by the Federal Circuit to be abstract. *Id.* (citing *Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.*, 758 F.3d 1344 (Fed. Cir. 2014) and other cases); *see also* Ans. 3–4. We agree.

According to the Specification, the invention suggests potential contacts to the user based on the potential friendship’s value. *See, e.g.*, Spec. ¶ 19. The invention’s objectives include helping users make meaningful and efficient connections with new contacts and improving user engagement. *Id.* ¶¶ 2, 4; *accord* App. Br. 12; Reply Br. 2–3 (discussing user engagement). The claims’ focus is on selecting certain information (i.e., “a value of a friendship to the user, a value of the friendship to the candidate user, or a probability of the friendship resulting between the user and the candidate user”) and analyzing the information using mathematical techniques (i.e., the recited difference calculation).

Similarly, the Federal Circuit has held that “collecting information, analyzing it, and displaying certain results of the collection and analysis” is an abstract idea. *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1353 (Fed. Cir. 2016). In fact, Appellants’ claims 1, 24, and 32 do not even recite displaying or otherwise using the calculation. Rather, the claimed invention merely collects the information and computes a difference.

Yet “[i]nformation as such is an intangible.” *Id.* The Federal Circuit has “treated collecting information, including when limited to particular

content (which does not change its character as information), as within the realm of abstract ideas.” *Id.* (citing *Digitech*, 758 F.3d at 1351 and other cases). Thus, contrary to Appellants’ arguments (App. Br. 11–12), limiting the information to particular content—in this case, social-network data—does not make the claims any less abstract. And “analyzing information . . . by mathematical algorithms, without more,” as we have here, is abstract. *Id.* at 1354; *see also Digitech*, 758 F.3d at 1351 (explaining that “mathematical algorithms to manipulate existing information to generate additional information” is abstract), *cited in* Final Act. 8.

Appellants argue that the claims are rooted in technology. App. Br. 7–9. Appellants explain that the claimed features address a problem that did not exist in the pre-Internet world: determining when to provide users with social-media content. *Id.* at 9–10. According to Appellants, the claims minimize computing resources and solve a technology-based problem, like the claims in *McRO, Inc. v. Bandai Namco Games America*, 837 F.3d 1299 (Fed. Cir. 2016). Reply Br. 4–6.

We disagree that the claims are similar to those in *McRO*. The claims in *McRO* recited a specific way to improve three-dimensional animation. 837 F.3d at 1315. By contrast, Appellants’ claims are broadly functional and result-oriented. For example, the first step broadly and abstractly recites determining a friendship value without claiming any particular technology-rooted solution for doing so. The recited determination is only limited by the data collected and processed. The second limitation in the claims computes a difference using a “function or mapping,” but neither is expressly claimed. Although Appellants argue the invention minimizes computing resources (Reply Br. 2–4) and requires “sophisticated server

software” (App. Br. 12), these technical details are unclaimed. In this way, Appellants’ claims are unlike those in *McRO* because the claims here are “directed to a result or effect that itself is the abstract idea and merely invoke generic processes and machinery.” *McRO*, 837 F.3d at 1314.

On this record, we are unpersuaded that the Examiner erred in concluding that claims 1, 24, and 32 are directed to an abstract idea.

## II

Because the claims are “directed to an abstract idea,” we consider the claim limitations “both individually and ‘as an ordered combination’ to determine whether the additional elements ‘transform the nature of the claim’ into a patent-eligible application.” *Alice*, 134 S. Ct. at 2355 (quoting *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 78–79 (2012)). The Supreme Court has described this analysis “as a search for an ‘inventive concept.’” *Alice*, 134 S. Ct. at 2355.

Appellants argue that the invention provides an Internet-centric solution rooted in computer technology. App. Br. 10. In this regard, Appellants explain that the claimed system is rooted in technology like the system in *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245 (Fed. Cir. 2014). App. Br. 9–12. To support this contention, Appellants point to the limitations of determining a friendship value and computing a difference. *Id.* at 9–10.

Yet all the limitations argued by Appellants (*id.*) are themselves abstract as identified in *Alice* step one. *Accord* Adv. Act. 2 (“[The] claims do nothing more than perform steps comparable to [the identified] abstract ideas.”). Appellants argue that the problem only arises in the Internet-based technology of social networks. App. Br. 10–12. But as discussed above,

limiting the information to a particular content—e.g., social networking—does not make the claim less abstract. The “inventive concept” must be more than the abstract idea itself. *Mayo*, 566 U.S. at 72–73 (requiring that “a process that focuses upon the use of a natural law also contain other elements or a combination of elements, sometimes referred to as an ‘inventive concept,’ sufficient to ensure that the patent in practice amounts to *significantly more* than a patent upon the natural law itself”) (emphasis added).

Apart from the abstract idea itself, claims 24 and 32 only recite a processor, memory, and a computer-readable storage medium. To be sure, these devices are physical. But these limitations do not require improved devices that Appellants claim to have invented. Ans. 6. According to the Specification, the recited processor covers a general-purpose computing device that executes the instructions. Spec. ¶ 106, *cited in* Final Act. 11. The memory and medium can be “any suitable media” for storing those instructions. Spec. ¶ 106. As the Examiner points out (Adv. Act. 2), the Supreme Court has ruled that such use of general-purpose computing devices is insufficient under *Alice* step two. *See Alice*, 134 S. Ct. at 2358 (“[T]he mere recitation of a generic computer cannot transform a patent-ineligible abstract idea into a patent-eligible invention. Stating an abstract idea ‘while adding the words “apply it”’ is not enough for patent eligibility.” (citing *Mayo*, 566 U.S. at 66)).

In summary, nothing in the claim supplies the “inventive concept,” considering the limitations individually or in combination. Rather, the limitations themselves fall squarely in the abstract-idea realm.

Appellants argue that the claimed features are not well-known or conventional. App. Br. 12–15. According to Appellants, the claims include features beyond sending and receiving data, such as computing a difference in engagement levels and using a function to project engagement levels. *Id.* at 14.

Appellants’ purported improvement is to the mathematical calculations, not the computers themselves. We note that the Federal Circuit has recognized that “an invocation of already-available computers that are not themselves plausibly asserted to be an advance, for use in carrying out improved mathematical calculations, amounts to a recitation of what is ‘well-understood, routine, [and] conventional.’” *SAP Am., Inc. v. InvestPic, LLC*, 890 F.3d 1016, 1023 (Fed. Cir. 2018) (alteration in original) (citing *Mayo*, 566 U.S. at 73). Furthermore, Appellants’ claims recite the mathematical calculations at a high level of abstraction. In essence, the claims are directed to the results of the functions, instead of the mathematical calculations themselves.

As discussed above, the limitations in claims 1, 24, and 32, apart from the abstract idea itself, do not amount to anything more than mere instructions to implement the abstract concept on a computer. Therefore, whether or not the Examiner is correct in finding that the claims contain additional well-understood, routine, and conventional activities previously known to the industry (Final Act. 10), such reasoning is cumulative.

Therefore, Appellants have not persuaded us of error in the rejection of independent claims 1, 24, and 32 under 35 U.S.C. § 101, and we sustain the Examiner’s rejection of those claims.

*The Dependent Claims*

Appellants' arguments for dependent claims 2, 5, 7–12, and 25–31 raise the same issues as those that we have addressed in discussing independent claims 1 and 24 above. *See* App. Br. 15–18. For example, after quoting claims 2, 5, and 7–12, Appellants argue that the claims “introduce Internet-centric solutions, necessarily rooted in computer technology.” *Id.* at 17. Appellants repeat the argument that, under *DDR Holdings*, the claims are not abstract and amount to significantly more than the abstract idea itself. *Id.* Appellants reiterate that the claims improve a technical field and are not generic or conventional implementations. *Id.* We find those arguments unpersuasive for the reasons previously discussed.

Appellants further argue that the dependent claims provide details on how to calculate the engagement level, which are neither included in the abstract idea nor extra-solution activities. *Id.* at 17–18. But apart from quoting the claims, Appellants provide little discussion of specific limitations in connection with this argument. *See id.* at 15–18. Further, although we agree that certain of the dependent claims further define the calculations' basis (e.g., claims 2, 5, and 8–12), those limitations do not change the claims' focus: analyzing the information using mathematical techniques, which is abstract as discussed in our *Alice* step-one analysis above. By limiting the basis for the calculations, the dependent claims only further define the abstract idea itself but do not add anything more. So, under *Alice* step two, the only alleged “inventive concept” is an abstract idea.

Accordingly, we sustain the Examiner's rejection of dependent claims 2, 5, 7–12, and 25–31.

*Claim 32*

Claim 32 recites, in part, “[a] computer-readable storage medium storing instructions that” cause the system to perform a method similar to the one recited in claim 1.<sup>4</sup> The Examiner further rejects claim 32 under 35 U.S.C. § 101 as directed to non-statutory subject matter: a transitory propagating signal per se. Final Act. 11–12. Appellants do not provide a substantive argument regarding this rejection. *See* App. Br.; *see also* Reply Br.

We review the appealed rejections for error based upon the issues identified by Appellants and in light of the produced arguments and evidence. *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential). In the absence of such an argument here, we sustain the Examiner’s rejection of claim 32. *See id.* at 1075–76 (explaining that if Appellants fail “to present arguments on a particular issue—or, more broadly, on a particular rejection—the Board will not, as a general matter, unilaterally review those uncontested aspects of the rejection”); *see also* MPEP § 1205.02 (9th ed. Rev. 08.2017, Jan. 2018) (“If a ground of rejection stated by the examiner is not addressed in the [Appellants’] brief, [Appellants] have waived any challenge to that ground of rejection and the Board may summarily sustain it.” (citing 37 C.F.R. § 41.39(a)(1))).

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<sup>4</sup> As discussed above, Appellants proposed the language “non-transitory” in an amendment that was not entered. *See* Adv. Act.

## THE OBVIOUSNESS REJECTION

### *The Examiner's Findings*

The Examiner finds that Jagadish teaches every limitation recited in claim 1 except for the computed difference. Final Act. 12–14. In concluding that claim 1 would have been obvious, the Examiner cites Carmel as teaching this feature. *Id.* at 13. In particular, the Examiner finds that Carmel computes user engagement by determining the rate at which a user updates a webpage. *Id.* (citing Carmel ¶¶ 110, 123). According to the Examiner, Carmel computes the difference between a user's update rate and a predicted user update rate. Final Act. 13; Ans. 8–9.

### *Appellants' Contentions*

Appellants argue that Carmel does not teach computing a difference between a user's current and projected engagement levels. App. Br. 19–20; Reply Br. 6–7. According to Appellants, Carmel merely predicts how often the user is likely to update a webpage using the frequency that the user updates another webpage. App. Br. 20 (citing Carmel ¶¶ 87, 95–103, 106–110, 123). Appellants also dispute whether these page updates correspond to the recited engagement level. App. Br. 20.

### *Analysis*

The disputed limitation of claim 1 recites, in part, “computing a difference between a *current engagement level* of the user with a social network and a *projected engagement level* of the user with the social network” (emphasis added).

The Examiner finds that Carmel's update rate for user *u* corresponds to the recited “current engagement level.” Final Act. 13 (citing Carmel ¶ 110); Ans. 8–9. The Examiner further finds that Carmel's virtual

predicted update rate corresponds to the recited “projected engagement level.” Final Act. 13 (citing Carmel ¶ 123); Ans. 8–9. The Examiner, however, has not shown that Carmel computes a difference between these values, as Appellants argue (App. Br. 19–20; Reply Br. 6).

In particular, Carmel assumes that a set of users  $U$  update a set of pages  $P$  over time. Carmel ¶ 105. Carmel measures the update rate of page  $p$  for each user  $u$  in  $U_i(p)$ . *Id.* ¶ 110. Carmel expresses the general update rate of  $p$  as  $\lambda_p(t) = \sum_{u \in U_i(p)} \lambda_p^u(t)$ . *Id.* The Examiner finds that a user’s update rate corresponds to the recited current engagement level. Final Act. 13 (citing Carmel ¶ 110).

Even assuming, without deciding, Carmel’s update rates are engagement levels, the Examiner has not shown that Carmel computes a difference between the current update rate and a projected update rate. *See* Final Act. 13. According to the Examiner, Carmel teaches such a difference in paragraph 123. *Id.*; Ans. 8. But there, Carmel provides an expression that uses the similarity between pages to calculate the virtual predicted update rate:  $\sum_{p' \in P_t(u')} \lambda_{p'}^{u'}(t) \times \overline{\text{sim}_{u',t}}(p, p')$ . Carmel ¶ 123. Specifically, in this expression, users  $u'$  are those that have updated pages  $p'$  in  $P_t(u')$  up to time  $t$ . *Id.* ¶ 122. The update rate of  $u'$  to page  $p'$  is  $\lambda_{p'}^{u'}(t)$ . *Id.* So, Carmel considers the similarity between page  $p$  and other pages  $p'$  in  $P_t(u')$  that have some relatedness to user  $u$ . *Id.* ¶ 121. At most, the Carmel’s similarity calculation suggests a difference between pages—not rates. *See id.* ¶ 123. Therefore, contrary to the Examiner’s finding (Final Act. 13; Ans. 8), the cited summation does not compute the difference between Carmel’s update rate and the virtual predicted update rate. *Accord* App. Br. 19–20.

Accordingly, we do not sustain the Examiner's rejection of claim 1 and independent claims 24 and 32, which also recite the computing a difference between a current and projected engagement level. For similar reasons, we do not sustain the Examiner's rejection of 2–5, 7–12, 25–31, and 33, which depend from claims 1 or 24.

#### DECISION

Because we have affirmed at least one ground of rejection with respect to each claim on appeal, the Examiner's rejection of claims 1–5, 7–12, and 24–33 is affirmed. *See* 37 C.F.R. § 41.50(a)(1).

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