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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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Ex parte DINESH GARG
and RAMASURI NARAYANAM

_____

Appeal 2018–002290
Application 13/682,415
Technology Center 2400

_____

Before JOYCE CRAIG, SCOTT. E. BAIN, and
MICHAEL T. CYGAN, *Administrative Patent Judges.*

CYGAN, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant appeals from the
Examiner's decision to reject claims 9, 11, 12, 14–17, 19, 20, and 22–26.[1]
Appeal Br. 17–22. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM IN PART.

_____

[1] We use the word "Appellant" to refer to "applicant" as defined in
37 C.F.R. § 1.42. Appellant identifies the real party in interest as
International Business Machines Corporation. Appeal Br. 2.

CLAIMED SUBJECT MATTER

The claims are directed to ranking one user's connections in an electronic social network. Abstr. An electronic apparatus may be used to identify those connections, analyze data sources for electronic communications with other users, and calculate the probability of future communications with those users. *Id.* The probability calculations may be used to rank the connections with other users, remove connections based upon the rankings. *Id.* A diagnostic model of the social network may be formed based upon the ranked connections with other users. Appeal Br. 2 (citing Spec. ¶¶ 82, 156). Independent claim 9 is illustrative, with the limitation at issue italicized for emphasis:

> 1.   A computer system, comprising:
>
> a processor;
>
> a memory; and
>
> a program comprising a plurality of instructions stored in the memory that are executed by the processor to:
> identify one user's connections with other users in an electronic social network;
>
> create a data structure in the memory that represents the one user, the other users, and the one user's connections with the other users;
>
> analyze a plurality of data sources for electronic communications between the one user and the other users;
>
> assign a relative importance value to each data source of the plurality of data sources;
>
> assign a weight to each connection between the one user and the other users, *the weight being an encoded value computed based on a link structure of the connections, the link structure including metadata indicating a category and a status of the respective connections, the weight enabling an emulation and*

> *behavioral prediction of the electronic social network in response to a stimulus applied to the electronic social network*;
>
> calculate for each of the other users the probability that the one user will communicate with that other user based on the analyzed plurality of data sources and the weight values;
>
> rank the one user's connections with the other users based on the calculated probabilities;
>
> remove from the data structure one or more data structure elements of the one user's connections based on the ranked one user's connections to create a signature graph; and
>
> form a diagnostic model of the electronic social network, the diagnostic model including the signature graph to accelerate a processing speed of the diagnostic model on a social network analysis system.

Appeal Br. 17–18 (Claims App.).

Independent claim 17 recites a computer program product having limitations commensurate in scope with claim 1. *Id.* at 19–20. Dependent claims 11, 12, 14–16, and 19–26 each incorporate the limitations of their respective independent claims. *Id.* at 18–22. Claims 1–8, 10, and 13 have been cancelled. Final Act. 2.

REFERENCES

Name	Reference	Date
Darr	US 2007/0226248 A1	Sept. 27, 2007 Filed Feb. 12, 2007
Chakraborty et al. ("Chakraborty")	US 2009/0192809 A1	July 30, 2009 Filed Jan. 28, 2008
Carthcart et al. ("Carthcart")	US 2013/0212173 A1	Aug. 15, 2013 Filed Feb. 13, 2012

REJECTIONS

Claims 9, 11, 12, 17, 19, 20, 25, and 26 are rejected under 35 U.S.C. § 103(a) as being obvious over Carthcart and Chakraborty.

Claims 14–16, and 22–24 are rejected under 35 U.S.C. § 103(a) as being obvious over Carthcart, Chakraborty, and Darr.

OPINION

A. Obviousness Over Carthcart and Chakraborty

The first issue in this appeal is the following limitation of claim 9:

> assign a weight to each connection between the one user and the other users, the weight being an encoded value computed based on a link structure of the connections, the link structure including metadata indicating a category and a status of the respective connections[.]

With respect to this limitation, the Examiner finds Carthcart teaches assigning a weight to each connection between one user and other users. Final Act. 5. The Examiner explains that Carthcart teaches weighting user connections using an affinity score as well as weighting individual users based on a variety of features such as age, common friends, and how long a user has been using a social network system. *Id.* at 5–6 (citing Carthcart ¶¶ 17–18). The Examiner states that Carthcart does not explicitly teach that the assigned weight is an encoded value that is computed based on a link structure of the connections, where the link structure includes metadata indicating a category and a status of the respective connections; further, the weight enabling an emulation and behavioral prediction of the electronic network in response to a stimulus applied to the electronic social network. *Id.* at 6–7.

The Examiner finds Chakraborty supplies the missing teachings. The Examiner cites to Chakraborty's teaching of "computing the weight for connections, edges, between nodes using a CDR (Call Detail Record) that records various data on different nodes and the connections . . . wherein the CDR can include data describing the nodes and their connections [which is] similar to the categories and status information described by the [Appellant's] Specification." *Id.* at 7–8 (citing Chakraborty ¶¶ 21–22, 57, and Fig. 7).

Appellant first contends that the Examiner errs in determining that the applied combination teaches or suggests an encoded weight value based on link structure metadata indicating a category and a status of a connection. Appeal Br. 5. Appellant contends that the Examiner errs in relying on Chakraborty to teach link structure metadata indicating a category or status of a connection. *Id.* at 8–9. Specifically, Appellant argues that Figure 7 discloses call frequency and call duration features, as well as whether a call was made to or from a churner or between adjacent churners. *Id.* at 9. Appellant argues that call frequency and call duration are not the type of category and status of a connection as claimed. *Id.* Appellant further argues that none of the features of Figure 7, except for those also in paragraph 22, are used to derive a weight value. Appellant points to Chakraborty's paragraph 29, which states that the weight of a directed edge is the aggregate of all calls made by A to B. *Id.* at 4.

We turn to the Specification to understand the scope of the claimed category and status of a connection. The Specification provides examples of "status" of a connection that include "pending, accepted, avoided, or rejected" calls. The Specification provides examples of a "category" of a

connection that include "user-to-user, business-to-user, system-to-user, and system-to-business connections." Spec. ¶ 66.

In view of the Specification, we agree with the Examiner that Chakraborty teaches link structure metadata, which includes metadata including a category of connections; i.e., the category of user-to-user specified as user-to-churner neighbors. Final Act. 8; Ans. 2–4; Chakraborty ¶ 57, Fig. 7. We also agree that Chakraborty teaches that the metadata includes a status of connections, in that the calls used in the measurement calculations are "accepted" calls, i.e., those having a duration of 5 seconds or longer. Chakraborty ¶ 29; Ans. 4.

We further agree that the weight is calculated for the call frequency and volume, which may, as shown in the Call Detail Record to be indicative of user-to-churner connections. Ans, 3 (citing Chakraborty ¶¶ 21, 22, 57, Fig. 7). Although Appellant argues that Chakraborty's weight calculation is solely from call frequency and volume, the Examiner shows that Chakraborty's weight calculation is from call frequency and volume indicating accepted calls (a status of the connection) and indicating user-to-churner calls (a category of the connection). Appellant's argument that Chakraborty computes the weight as the aggregate of all calls made by A to B; i.e., the call frequency or call volume, is not inconsistent with the Examiner's explanation that the Call Data Record includes metadata indicating the user-to-churner category of the accepted calls. Accordingly, we are not persuaded that the Examiner errs in determining that Chakraborty, combined with Carthcart, teaches that the weight is computed based on a linked structure of the connections, including metadata indicating a category and status of the respective connections.

Next we consider whether the references disclose an emulation and behavioral prediction of a social network in response to a stimulus applied thereto. Appeal Br. 9. Appellant contends that the Examiner improperly relies upon Chakraborty's removal of links as corresponding to two separate claim limitations; i.e., to "remove from the data structure one or more data structure elements of the one user's connection" and the "stimulus." *Id.* Appellant argues that the claim requires a signature graph to be created from the removal of data structure elements, and that the signature graph then be used to form a diagnostic model, upon which a stimulus may be applied to provide an emulation and behavioral prediction of the network. *Id.* Appellant contends that Chakraborty, while removing links, does not apply a stimulus to the network after their removal. *Id.*

The claim requires that "the weight enabl[es] an emulation and behavioral prediction of the electronic social network in response to a stimulus applied to the electronic social network." Appellant characterizes Chakraborty as "the influence of a churner on another to churn appears to be predicted based on the strength of ties between the users." Reply Br. 8. Thus, Appellant's characterization itself admits that in Chakraborty, the weight (strength of ties between the users) enables behavioral prediction (the influence of a churner on another to churn). Although Appellant argues that Chakraborty does not appear to apply a stimulus to the network after the removal of links, the claim only requires that the weight "enables" such prediction in response to an applied stimulus; it does not set forth a positive recitation of a step of applying a stimulus. Appeal Br. 10. Thus, we are not persuaded that the Examiner errs in assigning the same feature of Chakraborty to the removal of links (claimed) and the application of a

stimulus to the network (unclaimed). Based on Appellant's characterization, we are not persuaded that the Examiner has not shown that Chakraborty teaches that "the weight enabl[es] an emulation and behavioral prediction of the electronic social network in response to a stimulus applied to the electronic social network."

Appellant next contends that the Examiner's rationale for combining the teachings and suggestions of Chakraborty with those of Carthcart is erroneous. Appellant characterizes the Examiner's rationale as being based on the advantages of removing and adding links, and using weights assigned to links to simulate user behavior, stated to provide a more robust and automatic method. Appeal Br. 11 (citing Final Act. 8–9). Appellant argues that the primary reference (Carthcart) already contains these features, so that there would be no purpose in adding the same features from Chakraborty. *Id.*

We are not persuaded by Appellant that the Examiner errs, because the Examiner provides a rationale for combining the references beyond that cited by Appellant. The test for obviousness is "what the combined teachings of the references would have suggested to those of ordinary skill in the art." *In re Keller*, 642 F.2d 413, 425 (CCPA 1981). With respect to the rationale for combining the teachings or suggestions of Carthcart and Chakraborty, the Examiner has stated, "[o]ne ordinary skill in the art would have been motivated to combine the teachings in order to create a more robust and automatic method for enabling users to computationally analyze social network to determine/detect context based patterns within social interaction data." Final Act. 9.

Although some features relied upon in the teachings of Chakraborty are of the same general nature (e.g., use of weights to simulate user behavior), the Examiner has relied upon different specific teachings not found in Carthcart; e.g., in the specific types of user behavior being weighted, so as to determine and detect context based patterns within social interaction data. Ans. 13. Moreover, we are not persuaded that combining the respective familiar elements of the cited references in the manner proffered by the Examiner would have been "uniquely challenging or difficult for one of ordinary skill in the art" at the time of Appellant's invention. *Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007) (citing *KSR*, 550 U.S. at 418); *See also KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (Fed. Cir. 2007) ("[I]f a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill"). Accordingly, because the Examiner provides a reasoned rationale comprising a motivation to combine the specific teachings of Carthcart and Chakraborty, we are not persuaded that the Examiner errs by providing an insufficient rationale to combine the references.

Accordingly, we are not persuaded of error in the Examiner's rejection of claim 9. Appellant states that independent claim 17, and dependent claims 11, 12, 17, 19, 20, 25, and 26, which are rejected under the same combination of references, are patentable for the same reasons as set forth with respect to the rejection of claim 9. Appeal Br. 11–12. For the same reasons as discussed with respect to claim 9, we sustain the

obviousness rejection of claims 11, 12, 17, 19, 20, 25, and 26. *See* 37 C.F.R. § 41.67(c)(iv).

B. Obviousness over Carthcart, Chakraborty, and Darr

Appellant argues that dependent claims 14–16 and 22–24 are patentable because of the alleged defects in the rejection of claim 9, and further because those defects are not cured by teachings of Darr. Appeal Br. 12–14.

With respect to claims 14 and 22–24, we are not persuaded by Appellant's arguments. As discussed, *supra*, we have determined that the Examiner does not err in rejecting claim 9, and independent claim 17 not separately argued. Consequently, we are not persuaded that the Examiner errs in relying on the same base combination of references for the same limitations in their respective dependent claims. Furthermore, Appellant merely alleges, without explanation, that the additional limitations of the dependent claims are not taught by the applied combination of references. *Id.* However, merely pointing out what a claim recites will not be considered an argument for separate patentability of the claim. 37 C.F.R. § 41.37(c)(1)(iv). As stated by the Federal Circuit, Rule 41.37 "require[s] more substantive arguments in an appeal brief than a mere recitation of the claim elements and a naked assertion that the corresponding elements were not found in the prior art." *In re Lovin*, 652 F.3d 1349, 1357 (Fed. Cir. 2011). Appellant's arguments are, therefore, not persuasive to show error in the Examiner's rejection of claims 14–16 and 22–24, and we sustain the obviousness rejection of those claims.

With respect to claims 15 and 16, Appellant further argues that dependent claim 15 is patentable for the further reason that the combination

of references, and particularly Darr, does not disclose assigning an "importance level" to data sources for electronic communications between users as recited in claim 9. Appeal Br. 13–14. The Examiner points to Darr's "marking interaction patterns of a real world social network as important when a score of a data pattern is above a certain threshold" as teaching or suggesting the claimed "assign[ing] a relative importance [level] to each data source of the plurality of data sources." Final Act. 13–14; Appeal Br. 17 (Claims App.). The Examiner does not explain how marking the patterns of the network corresponds with assigning an importance level to each data source. Accordingly, we are persuaded by Appellant that the Examiner errs in rejecting claim 15, and claim 16 depending therefrom. We, therefore, reverse the Examiner's rejection of claims 15 and 16.

CONCLUSION

For the above-described reasons, we affirm the Examiner's rejection of claims 9, 11, 12, 14, 17, 19, 20, and 22–26, and reverse the Examiner's rejection of claims 15 and 16, as being obvious under 35 U.S.C. § 103(a).

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	References/Grounds	Affirmed	Reversed
9, 11, 12, 17, 19, 20, 25, 26	103(a)	Carthcart, Chakraborty	9, 11, 12, 17, 19, 20, 25, 26	
14–16, 22–24	103(a)	Carthcart, Chakraborty, Darr	14, 22–24	15, 16
Overall			9, 11, 12,	15, 16

| **Outcome** | | | 14, 17, 19, 20, 22–26 | |

AFFIRMED IN PART