



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
13/563.001 07/31/2012 John C. Handley 20120359USNP/166552.3800 6472

145893 7590 11/30/2018
FOX ROTHSCHILD LLP / CONDUENT
PRINCETON PIKE CORPORATE CENTER
997 LENOX DRIVE
BLDG. #3
LAWRENCEVILLE, NJ 08648

Table with 1 column: EXAMINER

NGUYEN, NGA B

Table with 2 columns: ART UNIT, PAPER NUMBER

3683

Table with 2 columns: NOTIFICATION DATE, DELIVERY MODE

11/30/2018

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ipdocket@foxrothschild.com
Conduent.PatentDocketing@conduent.com

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JOHN C. HANDLEY

Appeal 2017-009271
Application 13/563,001¹
Technology Center 3600

Before CARLA M. KRIVAK, HUNG H. BUI, and JON M. JURGOVAN,
Administrative Patent Judges.

BUI, *Administrative Patent Judge.*

DECISION ON APPEAL

Appellant seeks our review under 35 U.S.C. § 134(a) of the Examiner’s final rejection of claims 1–6, 8–13, 15–18, and 20–22, which are all the claims pending in the application. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.²

¹ According to Appellant, the real party in interest is Xerox Corporation. App. Br. 3.

² Our Decision refers to Appellant’s Appeal Brief (“App. Br.”) filed December 19, 2016; the Reply Brief (“Reply Br.”) filed June 21, 2017; Examiner’s Answer (“Ans.”) mailed April 21, 2017; Final Office Action (“Final Act.”) mailed June 13, 2016; and original Specification (“Spec.”), filed July 31, 2012.

STATEMENT OF THE CASE

Appellant's invention relates to a method and system "for identifying factors that contribute to schedule deviation in a transportation system" by "collecting operating information for a vehicle along a transportation route" using "a computer aided dispatch/automated vehicle location (CAD/AVL) system," and "determining schedule deviation information" and "factors that most contribute[] to schedule deviation," using the operating information. Spec. ¶ 21, Abstract.

Claims 1, 8, and 15 are independent. Claim 1 illustrates Appellant's invention, as reproduced below:

1. A method of identifying factors that contribute to schedule deviation in a transportation system, the method comprising:

by a computer aided dispatch/automated vehicle location system, using a global positioning system to determine location data of vehicles in a transportation system;

collecting, at a processing device from the computer aided dispatch/automated vehicle location system, historic operating information of a vehicles[sic] in the transportation system including time and the location data determined by the computer aided dispatch/automated vehicle location system the[sic] related to previous operation of a vehicle along a transportation route;

determining, by the processing device, schedule deviation information for the vehicle along the transportation route based upon the historic operating information;

determining, by the processing device, effects of a driver of the vehicle and a sequence number of the route for a period of time associated with the historic operating information as factors that contributed to the schedule deviation;

constructing, by the processing device, a plurality of models, wherein each of the plurality of models includes at least one combination of the factors that contribute to the schedule deviation;

ranking, by the processing device, each of the plurality of models according to at least one information criterion;

assessing, by the processing device, an impact of the driver and the sequence number on a highest ranked model to produce a results set, wherein the results set comprises at least a highest ranked model showing at least one combination of factors that most contributes to schedule deviation;

suggesting, by the processing device, an action to be taken to reduce the schedule deviation based on the results set, wherein the action comprises providing the driver with additional driver training, adjusting the driver's compensation, or driver termination; and

presenting, by the processing device, the results set.

App. Br. 22–29 (Claims App.).

Evidence Considered

Levis et al. ("Levis")	US 2006/0235739 A1	Oct. 19, 2006
Zhong et al. ("Zhong")	US 2010/0088146 A1	Apr. 8, 2010
Yücel et al. ("Yücel")	US 2013/0046526 A1	Feb. 21, 2013

Examiner's Rejections

(1) Claims 1–6, 8–13, 15–18, and 20–22 stand rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter. Final Act. 3–5.

(2) Claims 1–6, 8–13, 15–18, and 20–22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Zhong, Yücel, and Levis. Final Act. 6–18.

ANALYSIS

35 U.S.C. § 101 Rejection of Claims 1–6, 8–13, 15–18, and 20–22

In *Alice Corp. Proprietary v. CLS Bank International*, 134 S. Ct. 2347 (2014), the Supreme Court reiterates an analytical two-step framework previously set forth in *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, 566 U.S. 66, 79 (2012), “for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts.” *Alice*, 134 S. Ct. at 2355. The first step in the analysis is to “determine whether the claims at issue are directed to one of those patent-ineligible concepts,” such as an abstract idea. *Id.* If the claims are directed to eligible subject matter, the inquiry ends. *Thales Visionix Inc. v. United States*, 850 F.3d 1343, 1349 (Fed. Cir. 2017); *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1339 (Fed. Cir. 2016). If the claims are directed to a patent-ineligible concept, the second step in the analysis is to consider the elements of the claims “individually and ‘as an ordered combination’” to determine whether there are additional elements that “‘transform the nature of the claim’ into a patent-eligible application.” *Alice*, 134 S. Ct. at 2355 (citing *Mayo*, 566 U.S. at 78). In other words, the second step is to “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.* (citing *Mayo*, 566 U.S. at 72).

In rejecting independent claims 1, 8, and 15, and dependent claims 2–6, 9–13, 16–18, and 20–22 under 35 U.S.C. § 101, the Examiner finds these claims are directed to “*identifying factors that contribute to schedule*

deviation in transportation” by “*collecting, determining, constructing, ranking, assessing, suggesting, and presenting data*”—an abstract idea similar to data gathering and manipulation techniques previously identified by the courts. Final Act. 3–4 (citing *Cyberfone Sys., LLC v. CNN Interactive Grp., Inc.*, 558 F. App’x 988 (Fed. Cir. 2014); *SmartGene, Inc. v. Advanced Biological Labs., SA*, 852 F. Supp. 2d 42 (D.D.C. 2012), *aff’d* 555 F. App’x 950 (Fed. Cir. 2014)).

The Examiner also finds the claimed “computer aided dispatch/automated vehicle location system, using a global positioning system” is well-known, and the claims’ “[g]eneric computers perform[] generic computer functions” of “*collecting, determining, constructing, ranking, assessing, suggesting, and presenting information.*” Final Act. 4–5; Ans. 20. As such, the Examiner determines the claims do not amount to significantly more than the abstract idea. Final Act. 4–5.

Appellant argues the independent claims together. App. Br. 8, 10, 12–13. We select claim 1 as representative at points in our discussions herein. Independent claims 8 and 15, and dependent claims 2–6, 9–13, 16–18, and 20–22 stand or fall with claim 1. *See* 37 C.F.R. § 41.37(c)(1)(iv).

Alice/Mayo—Step 1

Turning now to the first step of the *Alice* inquiry, Appellant contends the claims are not directed to an abstract idea because the claims are similar to the claims in *Amdocs*. App. Br. 8, 10 (citing *Amdocs (Israel) Ltd. v. Openet Telecom, Inc.*, 841 F.3d 1288 (Fed. Cir. 2016)). Particularly, Appellant argues the claims provide “an improvement over the prior art,” with “a technological solution (i.e., analyzing actual data regarding past schedule deviations to identify the causes) to a technological problem

(deviations from schedules) specific to a transportation system.” App. Br. 10. Appellant also argues the claims are patent-eligible for reasons similar to those in *McRO* and *BASCOM*—particularly because Appellant’s claims “allow computers to determine why particular vehicles in a transportation system are deviating from their planned schedules,” and “recite a specific, discrete implementation” for assessing historic operating information and determining schedule deviation causes. App. Br. 10–11 (citing *McRO, Inc. v. Bandai Namco Games America Inc.*, 837 F.3d 1299 (Fed. Cir. 2016); *BASCOM Global Internet Services, Inc. v. AT&T Mobility LLC*, 827 F.3d 1341 (Fed. Cir. 2016)).

We are not persuaded by Appellant’s arguments. At the outset, we note Appellant’s reliance on *BASCOM* and *Amdocs* to determine whether the claims are directed to an abstract idea under *Alice* step 1 is misplaced. In both these cases the precise nature of *BASCOM*’s claims and *Amdocs*’s claims was unknown and was not straightforward. Thus, the Federal Circuit opted to bypass *Alice* step 1 in favor of *Alice* step 2. Nevertheless, we find Appellant’s claims and Specification do not describe *technological improvements* similar to *McRO*, *Amdocs*, or *BASCOM*. Ans. 21–22. Particularly, the court determined that *McRO*’s claim was not directed to an abstract idea because it “uses the limited rules in a process specifically designed to achieve an improved technological result” over “existing, manual 3-D animation techniques.” In contrast, Appellant’s claim 1 processes historic operating information to identify driver contributions to schedule slippage average, and suggest changes to driver’s habits or compensation. *See McRO*, 837 F.3d at 1299, 1316; Spec. ¶¶ 1, 27, 35. We are not persuaded that Appellant’s claimed constructing and ranking models,

and identifying factors that contribute most to schedule deviation, describe a *technological improvement* as advocated by Appellant. *See* App. Br. 10–11. Additionally, claim 1’s steps are broadly claimed and do not specify or impose bounds on the “plurality of models . . . includ[ing] at least one combination of the factors that contribute to the schedule deviation,” ranking “according to at least one information criterion,” or assessing “an impact of the driver and the sequence number on a highest ranked model.” *See* App. Br. 22–23 (Claims App.).

In contrast to Appellant’s claim 1, the claims in *McRO* were drawn to improvements in the operation of a computer performing a task, rather than applying a computer system to perform known data storing and processing steps. *See McRO*, 837 F.3d at 1314. Particularly, *McRO*’s claims and Specification employ “rules that define output morph weight set stream as a function of phoneme sequence and time of said phoneme sequence” to “achieve an improved technological result.” *See McRO*, 837 F.3d at 1310, 1316. *McRO*’s improved technological result allows “computers to produce ‘accurate and realistic lip synchronization and facial expressions in animated characters’ that previously could only be produced by human animators.” *See McRO*, 837 F.3d at 1313. The claims in *Amdocs* concerned network components “arrayed in a distributed architecture” that “collect[ed] and process[ed] data close to its source,” and thereby “enable[d] load distribution” and reduced network congestion. *See Amdocs*, 841 F.3d at 1291–92, 1300, 1303, 1306. As such, *Amdocs*’ claims “entail[] an unconventional solution (enhancing data in a distributed fashion) to a technological problem (massive record flows which previously required massive databases)” and “improve the performance of the system itself.” *Id.*

at 1302. Finally, *BASCOM*'s patent-eligible ordered combination of claim limitations contains an “inventive concept [that] harnesses [a] technical feature of network technology in a filtering system by associating individual accounts with their own filtering scheme and elements while locating the filtering system on an ISP [Internet Service Provider] server.” Thus “improv[ing] the performance of the computer system itself” with a “technology-based solution . . . to filter content on the Internet that overcomes existing problems with other Internet filtering systems.” *See BASCOM*, 827 F.3d at 1350–52.

Here, Appellant has not provided evidence that the claims achieve an improvement in computer functionality, data storage and access, or communication networks. Ans. 21–22. For example, none of the steps recited in claim 1 provide, and nowhere in Appellant's Specification can we find, any description or explanation as to how the claimed “determining,” “constructing” and “ranking” models, “assessing,” and “suggesting” steps are intended to provide: (1) a “solution . . . necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks,” as explained by the Federal Circuit in *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1257 (Fed. Cir. 2014); (2) “a specific improvement to the way computers operate,” as explained in *Enfish*, 822 F.3d at 1336; (3) an “unconventional technological solution . . . to a technological problem” that “improve[s] the performance of the system itself,” as explained in *Amdocs*, 841 F.3d at 1302; or (4) “a technology-based solution . . . to filter content on the Internet that overcomes existing problems with other Internet filtering systems” and “improve[s] an existing technological process” as explained in *BASCOM*, 827 F.3d at 1351.

We are also unpersuaded by Appellant’s argument that claim 1 is not abstract because it is a “concrete or tangible application” that “collect[s] specific types of data . . . using specific equipment (a computer aided dispatch/automated vehicle location system) to produce specific results (at least one combination of factors that most contributes to schedule deviation in a transportation system).” App. Br. 9. As the Supreme Court emphasized in *Bilski*, “although the machine-or-transformation test is not the only test for patentability, this by no means indicates that anything which produces a ‘useful, concrete, and tangible result,’ *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368, 1373 (CA Fed. 1998), is patentable.” *Bilski v. Kappos*, 561 U.S. 593, 658–660 (2010) (Breyer, J., concurring). Thus, “not every claim that recites concrete, tangible components escapes the reach of the abstract-idea inquiry.” *In re TLI Commc’ns LLC Patent Litig.*, 823 F.3d 607, 611 (Fed. Cir. 2016). Additionally, Appellant’s claimed CAD/AVL and processing device merely collect information “for permitting a solution to be achieved more quickly, i.e., through the utilization of a computer for performing calculations.” Ans. 20; see *Bancorp Services, L.L.C. v. Sun Life Assurance Co. of Canada (U.S.)*, 687 F.3d 1266, 1278 (Fed. Cir. 2012) (“the fact that the required calculations could be performed more efficiently via a computer does not materially alter the patent eligibility of the claimed subject matter.”); and *Dealertrack, Inc. v. Huber*, 674 F.3d 1315, 1333–34 (Fed. Cir. 2012) (“Simply adding a ‘computer aided’ limitation to a claim covering an abstract concept, without more, is insufficient to render [a] claim patent eligible.”) (citation omitted).

Appellant next argues the Examiner’s “assertion, without any case law support, that the claims are directed to an abstract idea is deficient,” because “some evidentiary support is required for an abstract idea determination.” Reply Br. 3–4, 6 (citing *Ex parte Renald Poisson*, Appeal No. 2012-011084 (PTAB 2015) (where the Board held that absent supporting evidence in the record, the Examiner’s opinion is an inadequate finding of fact on which to base the *Alice* analysis)).

Appellant’s argument is not persuasive. First, we note the Examiner did cite court decisions identifying data gathering and manipulation techniques as abstract ideas. Final Act. 3–4 (citing *Cyberfone* and *SmartGene*). We agree with the Examiner that the claims are directed to collecting, analyzing, and presenting information—an abstract idea similar to data gathering and processing techniques previously identified by the courts. Final Act. 3–4; Ans. 21; see also *Content Extraction & Transmission LLC v. Wells Fargo Bank, Nat’l Ass’n*, 776 F.3d 1343, 1347–48 (Fed. Cir. 2014) (finding “[t]he concept of data collection, recognition, and storage is undisputedly well-known,” and “humans have always performed these functions”); *Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.*, 758 F.3d 1344, 1351 (Fed. Cir. 2014) (employing mathematical algorithms to manipulate existing information); and *Electric Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1353–54 (Fed. Cir. 2016) (collecting information and “analyzing information by steps people go through in their minds, or by mathematical algorithms, without more, [are] essentially mental processes within the abstract-idea category”).

Second, patent eligibility under 35 U.S.C. § 101 is a question of law that is reviewable *de novo*. See *Dealertrack*, 674 F.3d at 1333. We are

aware of no controlling authority that requires the Office to provide factual evidence under step one of the *Alice* framework to support a determination that a claim is directed to an abstract idea. Instead, the Federal Circuit has repeatedly noted that “the prima facie case is merely a procedural device that enables an appropriate shift of the burden of production.” *Hyatt v. Dudas*, 492 F.3d 1365, 1369 (Fed. Cir. 2007) (citing *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992)). The court has held that the USPTO carries its procedural burden of establishing a prima facie case when its rejection satisfies the requirements of 35 U.S.C. § 132 by notifying the applicant of the reasons for rejection, “together with such information and references as may be useful in judging of the propriety of continuing the prosecution of [the] application.” *In re Jung*, 637 F.3d 1356, 1362 (Fed. Cir. 2011). Thus, all that is required of the Office is that it set forth the statutory basis of the rejection in a sufficiently articulate and informative manner as to meet the notice requirement of 35 U.S.C. § 132. *Id.*, see also *Chester v. Miller*, 906 F.2d 1574, 1578 (Fed. Cir. 1990) (Section 132 “is violated when [t]he rejection is so uninformative that it prevents the applicant from recognizing and seeking to counter the grounds for rejection.”).

Accordingly, we agree with the Examiner claims 1, 8, and 15 are directed to an abstract idea.

Alice/Mayo—Step 2 (Inventive Concept)

Appellant also alleges the claims “require significantly more than the abstract idea” in the form of “non-abstract limitations such as the . . . CAD/AVL[] system using a global positioning system (GPS), to determine location data of vehicles in a transportation system.” App. Br. 11–12. Appellant argues the claims’ “specific hardware (a CAD/AVL system) that

uses a GPS system to track vehicles in a transportation system” is “integral to the operation of the system.” App. Br. 12–13.

Appellant’s arguments are not persuasive. As the Examiner shows, the claimed “processing device” and “[CAD/AVL] system, using a global positioning system to determine location data of vehicles in a transportation system” are generic computing elements previously known in the industry for collecting data (e.g., vehicle location data) and processing such data. Ans. 19–20; *see also* Spec. ¶¶ 2, 17, 52–53.³ Appellant has not demonstrated their claimed “computer aided dispatch/automated vehicle location system” (CAD/AVL) is able to perform *functions that are not merely generic* for a CAD/AVL system. *See DDR Holdings*, 773 F.3d at 1257–58. Appellant argues “[the] claims require using specific hardware” including a “CAD/AVL[] system (rather than a general purpose computing device), along with a global positioning system.” Reply Br. 5–6. Claim 1, however, merely requires a CAD/AVL using a GPS to determine and collect operating information of vehicles—a function typically performed by conventional CAD/AVL systems. *See* Spec. ¶ 2; Ans. 19–20. Claim 1 also does not recite a specific improvement in the technical functioning of a CAD/AVL. Ans. 20. Claim 1 merely performs analysis of collected vehicle information using a generically claimed processing device. Under similar circumstances, our reviewing court has held patent claims ineligible. *See*

³ A computer aided dispatch/automated vehicle location (CAD/AVL) system using GPS to determine location data of vehicles is conventional technology known to one skilled in the art of transportation systems. *See, e.g.,* Asad J. Khattak and Mark Hickman, *Automatic Vehicle Location and Computer-Aided Dispatch Systems: Design and Application Considerations*, *Journal of Public Transportation*, 2(1): 1–26 (1998).

Amdocs, 841 F.3d at 1301–02 (summarizing cases in which claims were found to be ineligible subject matter); *see also In re TLI Communications*, 823 F.3d at 615 (“Such vague, functional descriptions of server components are insufficient to transform the abstract idea into a patent-eligible invention.”). “[T]he use of generic computer elements like a microprocessor or user interface” to perform conventional computer functions “do not alone transform an otherwise abstract idea into patent-eligible subject matter.” *FairWarning IP, LLC v. Iatric Sys., Inc.*, 839 F.3d 1089, 1096 (Fed. Cir. 2016) (citing *DDR Holdings*, 773 F.3d at 1256).

Further, with respect to Appellant’s preemption argument (App. Br. 11), we note the *McRO* court explicitly “recognized that ‘the absence of complete preemption does not demonstrate patent eligibility.’” *See McRO*, 837 F.3d at 1315 (quoting *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1379 (Fed. Cir. 2015)). “Where a patent’s claims are deemed only to disclose patent ineligible subject matter” under the *Alice/Mayo* framework, “preemption concerns are fully addressed and made moot.” *Ariosa*, 788 F.3d at 1379.

Accordingly, claims 1, 8, and 15, when considered “both individually and ‘as an ordered combination,’” amount to nothing more than an attempt to patent the abstract idea embodied in the steps of the claims. *See Alice*, 134 S. Ct. at 2355 (quoting *Mayo*, 566 U.S. at 78).

Because we agree with the Examiner’s analysis and find Appellant’s arguments insufficient to show error, we sustain the Examiner’s § 101 rejection of independent claims 1, 8, and 15, and dependent claims 2–6, 9–13, 16–18, and 20–22, for which no separate arguments are provided.

§ 103(a) Rejection of Claims 1, 8, and 15

With respect to independent claim 1, the Examiner finds Zhong's route planning method optimizing driver selection based on drivers' familiarity with a route identifies factors that contribute to a vehicle's schedule deviation based on historic operating information of the vehicle, including time and the location data related to the vehicle's previous operation, the same as recited in claim 1. Final Act. 6–8 (citing Zhong ¶¶ 47, 49, 106, 167, 170, 180, 277, Fig. 2). The Examiner further finds Zhong determines effects of a driver and route sequence number on schedule deviation, constructs models including factors that contribute to schedule deviation, assesses an impact of the driver and sequence number on a highest ranked model, and suggests an action to be taken to reduce schedule deviation, as claimed. Final Act. 8–11.

The Examiner also relies on: (1) Yücel for teaching an action to be taken comprises “providing the driver with additional driver training” or “adjusting the driver's compensation”; and (2) Levis for teaching the claimed “using a global positioning system to determine location data of vehicles in a transportation system” by “a computer aided dispatch/automated vehicle location system” (central dispatch system 208 in Levis' Fig. 2, and dispatch manager system in Fig. 4), and collecting “time and location data determined by the computer aided dispatch/automated vehicle location system,” as claimed. Final Act. 12–14 (citing Yücel ¶¶ 15, 22, 81, 86, Fig. 11; Levis ¶¶ 46, 154, Figs. 2, 4, and 8); Ans. 25.

Appellant disputes the Examiner's factual findings regarding Zhong, Yücel, and Levis. In particular, Appellant argues “[n]othing in Levis, whether taken alone or in combination with Zhong and Yücel, suggests

collecting *historical GPS location data for a vehicle* and using that information to determine schedule deviation information for the vehicle.” App. Br. 15. Rather, Levis merely collects “a set of GPS coordinates for various *stops* on a route, not GPS data for vehicles as received from a GPS system.” App. Br. 15 (citing Levis, Fig. 8). Appellant also argues the Examiner’s combination of Zhong, Yücel, and Levis is improper because the “three disparate references . . . have nothing to do with the problem of schedule deviation.” Reply Br. 7. Rather, “Zhong is directed to a system that determines which driver should be assigned to a particular transportation route (with the goal of improving a driver’s familiarity with the route). . . . [which] has nothing to do with schedule deviation”; and “the goals of Yuvel [sic] [optimizing fuel consumption, with a focus on engine throttle and torque] are often at odds with Appellant’s claims’ goal of minimizing schedule deviation.” *Id.*

We do not find Appellant’s arguments persuasive. Rather, we find the Examiner has provided a comprehensive response to Appellant’s arguments supported by a preponderance of evidence. Ans. 23–28. Therefore, we adopt the Examiner’s findings and explanations provided therein. *Id.* For additional emphasis, we note claim 1’s “historic operating information of a vehicles [sic] in the transportation system” does not exclude “a set of GPS coordinates for various *stops*” of the vehicle on a route, as Appellant advocates. *See* App. Br. 15. Claim 1 recites “historic operating information of a vehicle[] . . . include[s] time and the location data determined by the computer aided dispatch/automated vehicle location [CAD/AVL] system” using “a global positioning system,” the “location data . . . related to previous operation of a vehicle along a transportation route.” *See* App. Br.

22 (Claim 1). That is, claim 1 requires the “historic operating information” to include “time and the location data” that are (i) “related to previous operation of a vehicle along a transportation route” and (ii) determined by the CAD/AVL system using a global positioning system. *See App. Br. 22 (Claim 1)*. Levis’ set of GPS coordinates designating the vehicle’s *stops* on a route are commensurate with Appellant’s broadly claimed “location data . . . related to previous operation of a vehicle along a transportation route.” Particularly, Levis’ “GPS Coordinate location data [in Historical Dispatch Plan Data 118] typically indicates a longitude and latitude coordinate for each location” served by a delivery vehicle (i.e., to deliver or pick up a package), and Levis’ “Average Arrival Time data . . . reflects a historical moving average of the [vehicle’s] arrival time for that location.” *See Levis ¶¶ 83, 154–155, Fig. 8*. Levis’ GPS Coordinate location data (of stops) is determined by a CAD/AVL system (central dispatch system 208 and dispatch manager system 45) using a GPS device (in the driver’s portable computing device communicating with the CAD/AVL), as required by claim 1. *See Levis ¶¶ 46–47, 50, 100, 154*. Additionally, Levis’ CAD/AVL system receives historical GPS location data for a vehicle’s movement *between stops*. *See Levis ¶¶ 47, 100, 134, Fig. 14*.

Thus, Levis teaches collecting “historic operating information of a vehicle[]” including “time and the location data determined by the computer aided dispatch/automated vehicle location system” using “a global positioning system,” as claimed.

Levis also uses the collected vehicle’s historical GPS location data to determine schedule deviation information for the delivery vehicle (e.g., package delivery or pickup outside “a certain limit (e.g., 10 minutes) of an

average time for that location . . . considered ‘on-time’”), as recited in claim 1. *See* Levis ¶ 155, *see also* ¶¶ 90, 100–101, 130–133; Final Act. 13–14. Thus, Levis teaches “determining . . . schedule deviation information for the vehicle along the transportation route based upon the historic operating information,” as recited in claim 1.

We are also not persuaded by Appellant’s argument that “the Examiner has pieced together three disparate references that have nothing to do with the problem of schedule deviation.” Reply Br. 7. As the Examiner finds, Zhong, like Levis, *is* concerned with *schedule deviation* from “specific pickup times or guaranteed delivery time” promised by a delivery service provider, and *is* concerned with the *causes of schedule deviation* (such as driver’s unfamiliarity with a route). *See* Zhong ¶¶ 3, 6, 79, 92, 120, 158, 323, Abstract; Final Act. 7–12. We also remain unpersuaded by Appellant’s argument that “the goal of claim 1 (reducing schedule deviation in a public transportation system) and the goal of Yücel (optimizing fuel efficiency) are often incompatible.” App. Br. 17. Instead, we agree with the Examiner that Yücel’s “evaluating driver performance, providing the driver with additional driver training, and adjusting the driver’s compensation” would improve Zhong’s route planning and assignment method by encouraging drivers to improve their performance. Ans. 27–28. Additionally, Yücel optimizes fuel efficiency by analyzing “logged time series of dynamically changing variables, such as those variables found in FIG. 1-10. . . . show[ing] in detail how both driver and vehicle may perform under given circumstances,” the circumstances including schedule constraints (such as “time for completing the route.”) *See* Yücel ¶¶ 6, 25, Abstract. Thus, Yücel’s quest for optimizing fuel efficiency can identify factors that contribute to schedule

deviation (e.g., driver’s suboptimal use of the accelerator), as claim 1 requires. *See* Yücel ¶¶ 6–8, 12, 19, 25, 28, 115.

In light of the broad terms recited in claim 1 and the arguments presented, Appellant has failed to clearly distinguish the claimed invention over the prior art relied on by the Examiner. Thus, we are not persuaded the Examiner erred and sustain the Examiner’s § 103 rejection of independent claim 1, and independent claims 8 and 15 argued for substantially the same reasons. App. Br. 20.

§ 103(a) Rejection of Claims 2, 9, and 16

Appellant contends “[n]o mention is made of the order of stops, nor does [sic] Zhang[sic] utilize a sequence number,” and therefore “Zhong fails to teach that a sequence number comprises an order of stops” as recited in claim 2. App. Br. 18.

We do not agree. Rather, we agree with the Examiner that Zhong takes into account an order of stops along a route (i.e., a sequence number) when analyzing schedule deviation of a package delivery vehicle. *See* Zhong ¶¶ 47–48, 277, 309–310 (“The Intra-route Exchange procedure attempts to re-order the stop sequence within a given route in order to achieve better route cost. . . . [T]he best route cost has the shortest total route duration, within the maximum workday duration constraint”), Fig. 2; Ans. 28–29.

Accordingly, we sustain the Examiner’s § 103 rejection of claim 2, as Appellant’s arguments have not persuaded us of error in the Examiner’s rejection. We also sustain the Examiner’s rejection of claims 9 and 16, reciting similar features and argued together with claim 2. App. Br. 20.

§ 103(a) Rejection of Claims 3, 10, and 17

Appellant contends Zhong only teaches use of a “Complex Hull Algorithm,” which is not a regression analysis as required by claim 3. App. Br. 18. The Examiner, however, finds that Yücel teaches regression modeling is known in the transportation field. Ans. 29–30 (citing Yücel ¶¶ 29, 114); see Yücel ¶¶ 29 (“Techniques familiar to practitioners of the statistical arts can use such data to make various kinds of forecasts and predictions. Such techniques include regression”), 114 (“Various statistical methods can be used to make such predictions based on observations such as those collected by the trip dynamics logger 1361 regarding state of vehicles 1300 and their components, route, and environment. . . . Examples of such prediction methods include regression”).

Accordingly, we sustain the Examiner’s § 103 rejection of claim 3, as Appellant’s arguments have not persuaded us of error in the Examiner’s rejection. We also sustain the Examiner’s rejection of claims 10 and 17, reciting similar features and argued together with claim 3. App. Br. 20.

§ 103(a) Rejection of Claims 4, 11, and 18

The Examiner finds “Zhong’s method uses Empirical data, experience, and historical route data (Generalized Information Criterion) to assist a route planner,” and therefore Zhong teaches the “Generalized Information Criterion” recited in claim 4. Ans. 30 (citing Zhong ¶ 139); Final Act. 15–16.

Appellant argues Zhong does not teach “[a]n ‘Information Criterion,’ [which] is a selection criterion for sorting statistical models by their effectiveness” and mentions none of a Bayesian Information Criterion,

Akaike's Information Criterion, Deviance Information Criterion, and Generalized Information Criterion as recited in claim 4. App. Br. 18–19. We are not persuaded by Appellant's arguments. The information criteria recited in claim 4 are known in the art, as evidenced by Appellant's Specification. *See* Spec. ¶ 34.⁴ Accordingly, we sustain the Examiner's § 103 rejection of claim 4, and claims 11 and 18 reciting similar limitations.

§ 103(a) Rejection of Claims 5 and 12

Appellant contends “Zhong does not endeavor to describe the dependency between a driver and/or an order of stops (sequence number) on deviations from a schedule,” as required by claim 5. App. Br. 19.

We do not agree. Rather, we agree with the Examiner that Zhong identifies the driver and the sequence number as factors contributing to schedule deviation, as required by claim 5 and its base claim 1. Ans. 31 (citing Zhong ¶¶ 47, 68); *see also* Zhong ¶¶ 76 (“Driver familiarity is optimal when a driver travels the same route every day”), 119–120 (“Consistent routes have both tangible and intangible benefits. A driver familiar with a route spends less time finding addresses and offices, and less time researching maps and directions”), 277, 309.

⁴ Appellant's Specification provides “[i]t should be noted that other information criteria for model ranking are known in the art and may be employed in place of BIC[, t]hese include, but are not limited to, Akaike's Information Criterion (AIC) and Deviance Information Criterion (DIC).” *See* Spec. ¶ 34; *see also* <https://www.tandfonline.com/doi/abs/10.1198/jasa.2009.tm08013> (describing a generalized information criterion).

Accordingly, we sustain the Examiner's § 103 rejection of claim 5, as Appellant's arguments have not persuaded us of error in the Examiner's rejection. We also sustain the Examiner's rejection of claim 12, reciting similar features and argued together with claim 5. App. Br. 20.

§ 103(a) Rejection of Claims 6 and 13

The Examiner finds Zhong's paragraphs 74, 139, and 170 teach a "results set, which comprises the suggested actions to be taken to reduce schedule deviation, is determined based upon the historic operating information and observed schedule adherence for the vehicle," as recited in claim 6. Ans. 32 (citing Zhong ¶¶ 74, 139, and 170); Final Act. 16.

Appellant argues Zhong merely discloses "how the distance between stops decreases as more stops are added," which does not pertain to "the claimed suggested actions to reduce schedule deviations. . . . [because Zhong's] [a]dding more stops will not serve to reduce deviations from a schedule, but will merely serve to alter the schedule." App. Br. 19.

We are not persuaded by Appellant's arguments, and agree with the Examiner that Zhong plans a route based on driver experience and historical route data, *to reduce schedule deviations*. See Zhong ¶¶ 49, 120, 139, 158, 170, 323. Zhong's route planning also includes *suggested actions*—such as providing drivers with additional driver training, to increase drivers' experience with the route's details, thus reducing schedule deviations. See Zhong ¶¶ 79, 120, 290, 323.

Accordingly, we sustain the Examiner's § 103 rejection of claim 6, as Appellant's arguments have not persuaded us of error in the Examiner's

rejection. We also sustain the Examiner’s rejection of claim 13, reciting similar features and argued together with claim 6. App. Br. 20.

§ 103(a) Rejection of Claims 20–22

Appellant contends Zhong merely determines “if a cell should be assigned to a core area, and the various factors that can be used to make the evaluation. . . . [which] has no relationship to suggested actions that a driver can take to reduce schedule deviations” as recited in claim 20. App. Br. 19.

We do not agree. Rather, we agree with the Examiner that Zhong discloses a suggested action instructing a driver to skip a planned stop, in order to reduce schedule deviation as claimed. Final Act. 18 (citing Zhong ¶¶ 183, 195, 311). For example, paragraphs 310 and 311 in Zhong disclose “remov[ing] a stop from one route” (which means a driver driving that route would skip that stop) and “insert[ing] it [the stop] into another route, to determine if the transfer reduces the total route cost,” the “route cost” indicating the “total route duration, within the maximum workday duration constraint.” *See* Zhong ¶¶ 310–311.

Accordingly, we sustain the Examiner’s § 103 rejection of claim 20, as Appellant’s arguments have not persuaded us of error in the Examiner’s rejection. We also sustain the Examiner’s rejection of claims 21 and 22, reciting similar features and argued together with claim 20. App. Br. 20.

CONCLUSION

On the record before us, we conclude Appellant has not demonstrated the Examiner erred in rejecting claims 1–6, 8–13, 15–18, and 20–22 under 35 U.S.C. § 101 and § 103(a).

Appeal 2017-009271
Application 13/563,001

DECISION

As such, we affirm the Examiner's final rejection of claims 1–6, 8–13, 15–18, and 20–22 under 35 U.S.C. § 101 and § 103(a).

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