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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte PETER PAUL, AARON MICHAEL BURRY, and JOEL EAGLE

Appeal 2017-008696
Application 13/451,938
Technology Center 3600

Before CARL W. WHITEHEAD JR., JEREMY J. CURCURI, and MICHAEL J. ENGLE, *Administrative Patent Judges*.

CURCURI, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's rejection of claim 17. Final Act. 1. We have jurisdiction under 35 U.S.C. § 6(b).

Claim 17 is rejected under 35 U.S.C. § 101 as being directed to a judicial exception without significantly more. Final Act. 2–5.

Claim 17 is rejected under pre-AIA 35 U.S.C. § 103(a) as obvious over Fitzpatrick (US 2006/0218057 A1; Sept. 28, 2006), Agrawal (US 2009/0309974 A1; Dec. 17, 2009), and Newman (US 2012/0116252; May 10, 2012). Final Act. 6–17.

We affirm.

STATEMENT OF THE CASE

Appellants' invention relates to

> platforms and techniques for estimating the number of occupants in a vehicle entering a fast food restaurant or other retail site, and using that number as an input to a production management engine for the retail site to adjust the food preparation or other production of the retail site to more closely match the instantaneous demand of the actual number of onsite customers.

Spec. ¶ 1. Claim 17 is illustrative and reproduced below:

17. A production management system for a retail site using multiple sensor types, comprising:

at least one acoustic sensor positioned to monitor an access area of the retail site, the at least one acoustic sensor configured to operate in realtime;

at least one thermal sensor positioned to monitor an access area of the retail site, the at least one thermal sensor configured to operate in realtime;

at least one optical sensor positioned to monitor an access area of the retail site, the at least one optical sensor configured to operate in realtime;

an interface to the at least one acoustic sensor, the at least one thermal sensor, and the at least one optical sensor to detect occupants of a vehicle in realtime; and

a processor, communicating with the set of sensors via the interface, the processor being configured to-

monitor an access area to an ordering point of the retail site via the at least one acoustic sensor, the at least one thermal sensor, and the at least one optical sensor, wherein the retail site comprises a restaurant, wherein the access area comprises at least one of an access roadway or a parking area,

identify the presence of a vehicle entering the access area of the retail site,

detect a number of occupants of the vehicle using optical imaging, thermal imaging using the at least one thermal sensor, and acoustic detection of voices using the at least one acoustic sensor, wherein the optical imaging comprises applying a seat detection algorithm to an optical image detected using the at least one optical sensor, and wherein the optical imaging further comprises applying a face recognition algorithm to the detected optical image, wherein the optical imaging further comprises the use of an infrared strobe,

receive the detected number of occupants,

receive order information from at least one occupant of the vehicle at the ordering point,

access a model of the retail site to operate the production management engine, wherein the model is based on historical customer order data,

generate a set of dynamically generated production instructions, to manage a production process of the retail site based on the detected number of occupants, wherein the set of dynamically generated production instructions comprises a specification of a quantity of at least one food item, wherein the set of dynamically generated production instructions comprises a specification of a start time for the processing of at least one food item, wherein the processor is further configured to generate an estimated queue delay for an order received from at least one occupant of the vehicle, wherein the processor is further configured to generate an estimated freshness rating for the at least one food item,

update in realtime the quantity of at least one food item to reflect the order information, and

update the model based on the order information.

PRINCIPLES OF LAW

We review the appealed rejections for error based upon the issues identified by Appellants, and in light of the arguments and evidence produced thereon. *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential).

ANALYSIS

THE 35 U.S.C. § 101 REJECTION OF CLAIM 17

Contentions

The Examiner concludes claim 17 is directed to an abstract idea without significantly more. Final Act. 2–5. In particular, the Examiner concludes the claimed subject matter

> can be performed mentally or in a computer and is similar to the kind of 'organizing human activity' and is an idea of itself. It is similar to other concepts that have been identified as abstract by the courts, such as using categories to organize, store and transmit information in *Cyberfone*, or computerized meal planning in *Dietgoal Innovations LLC*, or scanning and information processing methodology in *Content Extraction and Transmission LLC*.

Final Act. 3; *see also* Ans. 18–19.

Appellants present the following principal arguments:

i. "[C]laim 1 at issue in *Cyberfone* merely recites receiving information, breaking up the information, and transmitting the information." App. Br. 10. "The *Cyberfone* claims do not recite interactions with the

physical world, such as those recited in present claim 17." App. Br. 11. "The *Content Extraction* claims are directed to receiving, manipulating, and storing data *only*." App. Br. 11. "This is markedly different from the present claims, which provide a technique that includes multiple interactions with real-world things outside of any computer." App. Br. 11. "[C]laim 17 is not, in fact, directed to a method of organizing human activity. Rather, claim 17 is directed to improving a *production process*, which is in the field of manufacturing." App. Br. 12; *see also* Reply Br. 3 ("The recitation of particular sensors in the claims, together with the other claim features, improves the functionality of a *food production management system for a retail site*.").

ii. "The claim at issue in *Dietgoal* is remarkably short and broad in comparison to the present claims." App. Br. 13. "[T]he only identified additional elements on the *Dietgoal* case are software *per se*." App. Br. 14.

> In sum, none of the Office's examples of generic computers include thermal, optical, and acoustic sensors, and none of the Office's examples of generic computer functions include monitoring a physical access area, identifying the presence of a vehicle, detecting vehicle occupants, or even receiving order information, as claimed. In fact, a generic computer is incapable of capturing the claimed information and performing the claimed functions, because generic computers are not equipped with the claimed acoustic, thermal, and optical sensors configured to monitor access areas, identify the presence of a vehicle, detect a number of occupants of the vehicle, and receive order information from at least one occupant of the vehicle, as claimed.

App. Br. 14.

Our Review

In *Alice Corp. v. CLS Bank Int'l*, 134 S. Ct. 2347 (2014), the Supreme Court applied the framework as set forth in *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 US 66 (2012) for determining whether the claims are directed to patent-eligible subject matter. *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 [the judicially-recognized] patent-ineligible concepts." *Id.* If the claims are directed to a patent-ineligible concept, then the second step in the analysis is to consider the elements of the claims "individually and 'as an ordered combination' to determine whether the additional elements 'transform the nature of the claim' into a patent-eligible application." *Id.* (quoting *Mayo*, 566 US 66 at 79, 78). However, the Federal Circuit has articulated that "the first step in the *Alice* inquiry . . . asks whether the focus of the claims is on the specific asserted improvement in computer capabilities . . . or, instead, on a process that qualifies as an 'abstract idea' for which computers are invoked merely as a tool." *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335–36 (Fed. Cir. 2016). Accordingly, the Federal Circuit determined, if "the claims are directed to a specific implementation of a solution to a problem in the software arts," then "the claims at issue are not directed to an abstract idea." *Id.* at 1339. The Federal Circuit also determined claims directed to "limited rules in a process specifically designed to achieve an improved technological 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).

In the "Background" section, Appellants' Specification discloses the following:

> Moreover, even when restaurant managers or others attempt to manage the production process of the restaurant by estimating or manually counting the number of vehicles entering an ordering lane or parking for occupants to enter the front counter of the establishment, the number of vehicles serves, at best, as a rough indicator of the number of potential customers and therefore, anticipated orders for the restaurant. This can be due to the fact that the actual number of persons in some vehicles, including those with a large capacity, can vary widely depending on how fully that vehicle is loaded. *The actual occupancy of the vehicle may however remain unclear to the manager or others attempting to get a "head count" of customers based strictly on the identified number of vehicles approaching the establishment.*

Spec ¶ 4 (emphasis added).

In the "Description of Embodiments" section, Appellants' Specification discloses the following:

> Embodiments of the present teachings relate to systems and methods for realtime occupancy detection of vehicles approaching a retail site for predictive ordering. More particularly, embodiments relate to platforms and techniques for monitoring vehicle traffic approaching a restaurant and/or other retail site, and *generating an estimate of the number of occupants of the vehicle*. That estimated number of occupants can be transmitted to an operational model of the retail site, such as a model generated or accessed by a production management engine which generates operating instructions such as the type of food items to prepare, the quantity of those items to prepare, when to begin the cooking or other preparation of those items, and other production details. *Because in part the retail site can tie up-to-the-minute production instructions or details to a fairly accurate or granular estimate of the number of vehicle occupants, the efficiency of the retail operation can be improved.* In the case for instance of a fast-food restaurant, food can be delivered to a customer in a drive-through line or other access

> area which is fresher, and delivered on time to the customer as they arrive at the dispensing window or other pickup point, enhancing the customers' experience while reducing waste for the retail operator. Other advantages can also be achieved.

Spec. ¶ 12 (emphasis added).

We agree with Appellants that claim 17 is directed to an improved production process, and we conclude the claims focus on a specific improvement in computer-related technology and are analogous to *McRO*. In *McRO*, the court found that a claim reciting a system of automated facial animation through the use of rules, rather than by 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 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 incorporation of the specific features of the particular rules as claim limitations that improved the technological process, and 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 conclude the instant claim limitations are similar to the claim limitations at issue in *McRO*. The claims do not merely attempt to get a "head count" of customers based strictly on the identified number of vehicles approaching the establishment; rather, the claim limitations recite a specific technique that detects a number of occupants of the vehicle and improves the efficiency of the retail operation. Spec. ¶¶ 4, 12; Claim 17. As such, the claim limitations are directed to improving a technological process.

Accordingly, we do not sustain the Examiner's rejection of independent claim 17.

THE OBVIOUSNESS REJECTION OF CLAIM 17

Contentions

The Examiner finds Fitzpatrick, Agrawal, and Newman teach all limitations of claim 17. Final Act. 6–17.

In particular, the Examiner finds Fitzpatrick teaches "the set of dynamically generated production instructions comprises a specification of a start time for the processing of at least one food item" as recited in claim 17. Final Act. 12 (citing Fitzpatrick ¶ 87); *see also* Ans. 19–20 (citing Fitzpatrick ¶¶ 199, 207).

In particular, the Examiner finds Fitzpatrick teaches to "update in realtime the quantity of at least one food item to reflect the order information" as recited in claim 17. Final Act. 13 (citing Fitzpatrick ¶ 228); *see also* Ans. 20–22 (citing Fitzpatrick ¶¶ 202, 204).

In particular, the Examiner finds Agrawal teaches to "detect a number of occupants of the vehicle using optical imaging" as recited in claim 17, and further teaches "wherein the optical imaging comprises applying a seat detection algorithm to an optical image detected using the at least one optical sensor" as recited in claim 17. Final Act. 13–14. The Examiner reasons

> it would have been obvious to one with ordinary skill in the art at the time the invention was made to modify the Fitzpatrick [system and method] to incorporate the teaching of Agrawal, for the purpose of detecting the number of occupants of the vehicle, wherein the detecting comprises detecting the number of occupants using optical imaging, and wherein the optical

> imaging comprises applying a seat detection algorithm to a detected optical image, in order to provide more accuracy in detecting the number of occupants within the vehicle. Because Fitzpatrick discloses detecting number of customers using a plurality of different sensors *(paragraphs [0065]–[0068], Customer arrival measurement may be performed with any of a number of sensors 22 including mechanical, electrical, and chemical sensors)*, Agrawal discloses using optical sensor to detect number of occupants of the vehicle by applying a seat detection algorithm to an optical image, therefore, one of ordinary skill in the art would have recognized that the combination of Fitzpatrick and A[gr]awal [would] yield predictable results for detecting the occupants of the vehicle.

Final Act. 14–15; *see also* Ans. 22–23 ("Agrawal is relied on only for the teaching of the way [for] counting the occupants of the vehicle which Fitzpatrick already discloses the number of people by counting 'emerging from the cars' (paragraph [0090]). By adopting the teaching of the counting the occupants of the vehicle as disclosed by Agrawal, the advantage will be for counting people of a vehicle using drive through.").

In particular, the Examiner finds

> **Fitzpatrick does not disclose wherein the model is based on historical customer order data.** However, Fitzpatrick discloses that the related prior arts applying the model based on historical customer order data (*paragraph [0008], The restaurant industry's state-of-the art solutions are based on data-mining historical sales information to predict future ordering patterns. Each restaurant typically saves a multi-week history of its sales volumes for each product. For example, sales data of the past 70 days may be stored and analyzed*).

Final Act. 16. The Examiner reasons

> it would have been obvious to one with ordinary skill in the art at the time the invention was made to modify the Fitzpatrick [system and method] to incorporate the teaching of the related prior arts disclosed by Fitzpatrick, for the purpose of applying

> Fitzpatrick's model based on historical customer order data, in order to provide more efficiency in predicting future ordering patterns to improve performance of the restaurant.

Final Act. 16 (citing Fitzpatrick ¶ 83); *see also* Ans. 23–25 (finding Fitzpatrick does not teach away from using historical order data).

Appellants present the following principal arguments:

i. Fitzpatrick does not teach "the set of dynamically generated production instructions comprises a specification of a start time for the processing of at least one food item" as recited in claim 17 because "Fitzpatrick at most discloses that sensors detecting a car (or person) at a particular *location* is a trigger for the kitchen to take action before the customer places the order." App. Br. 15; *see also* Reply Br. 3–4 ("[T]his disclosure has nothing to do with any 'dynamically generated production instructions' generated by a programmed processor.").

ii. Fitzpatrick does not teach "update in realtime the quantity of at least one food item to reflect the order information" as recited in claim 17. *See* App. Br. 15–18. For example, Appellants argue

> The Office's interpretation of "quantity" as a database representation of a number of food items in Fitzpatrick's physical food buffers is not a proper reading of this term. This is because the quantity of food items in Fitzpatrick's food buffers is not the same as the quantity of food items specified in production instructions, which is required by the antecedent basis for the term "quantity" in claim 17. Specifically, Fitzpatrick's buffer state database represents food items present in Fitzpatrick's physical buffers (see Fitzpatrick, paragraph 58) as reported by Fitzpatrick's kitchen employees (see Fitzpatrick, paragraph 228). A "quantity of at least one food item" *as specified in production instructions* according to claim 17 does not properly read on Fitzpatrick's database representation of food items in its physical food storage buffer. Thus, the Office's interpretation of "the quantity" is improper even under a broadest-reasonable-

> interpretation standard, and the rejection should be therefore reversed.

App. Br. 17; *see also* Reply Br. 4–5 ("A bound on a quantity does not meet claim language that requires updating the quantity.").

iii. Agrawal is not analogous art because "[o]ne of ordinary skill in the art of restaurant production management would not look to a law enforcement technique." App. Br. 18.

iv. Agrawal teaches away from the facial recognition disclosed by Fitzpatrick because "Agrawal cautions against using facial recognition techniques." App. Br. 19 (citing Agrawal ¶ 18).

v. Fitzpatrick teaches away from using historical order data. App. Br. 19–21. "Fitzpatrick teaches that using historic information reduces speed and quality because it does not allow restaurant managers to know with confidence the demand that the restaurant will be in the near future." App. Br. 19 (citing Fitzpatrick ¶ 11). "Fitzpatrick again differentiates and distinguishes its 'buffer manager' technique from techniques such as the claimed technique that use historical customer order data." App. Br. 20. "Fitzpatrick distinguishes and disparages techniques that use historical customer order data from Fitzpatrick's own technique." App. Br. 20; *see also* Reply Br. 5–6

Our Review

We do not see any error in the contested findings of the Examiner. We concur with the Examiner's conclusion of obviousness.

Regarding Appellants' argument (i), Fitzpatrick discloses "[s]ensor placement is a function of the restaurant's performance—higher performance restaurants do not require as much warning time to react to

changes in consumer demand." Fitzpatrick ¶ 87. We agree with Appellants that this disclosure discloses a trigger for the kitchen to take action. But contrary to Appellants, we find such disclosure teaches "the set of dynamically generated production instructions comprises a specification of a start time for the processing of at least one food item" as recited in claim 17 because such a trigger specifies the start time as the current time at which the triggering occurs. *See* Final Act. 12. In addition, Fitzpatrick discloses "[t]he computer 20 may use queue simulation to make a series of production decisions in real time." Fitzpatrick ¶ 199. In addition, Fitzpatrick further discloses "it may be desirable to estimate the remaining time for a bin of food product components so as to decide when to begin cooking another bin of food product components." Fitzpatrick ¶ 207. These disclosures in Fitzpatrick further teach "the set of dynamically generated production instructions comprises a specification of a start time for the processing of at least one food item" as recited in claim 17 because Fitzpatrick's computer makes production decisions, and decides when to begin cooking food product components. *See* Ans. 19–20 (citing Fitzpatrick ¶¶ 199, 207).

Regarding Appellants' argument (ii), Fitzpatrick discloses "the computer 20 of buffer manager 18 according to the present invention determines the nominal buffer level using a patty count instead of a bin count." Fitzpatrick ¶ 202. Fitzpatrick further discloses "[e]stimation of desired nominal component buffer level may bound production by the total number of unplaced orders on the restaurant property." Fitzpatrick ¶ 204. Contrary to Appellants' arguments, these disclosures teach "update in realtime the quantity of at least one food item to reflect the order information" as recited in claim 17 because as orders are placed, the bound

on the buffer level changes, thereby reflecting the order information, particularly when the bound is actively restricting the buffer level.

Regarding Appellants' arguments (iii) and (iv), the particular problem with which Appellants are concerned is "estimating the number of occupants in a vehicle." Spec. ¶ 1. Although the application of Appellants' invention is in a retail site for predictive ordering, the particular problem faced is estimating the number of occupants in the vehicle. *See* Spec. ¶ 1. Agrawal is reasonably pertinent to this problem. *See* Agrawal Abstract (emphasis added) ("an automated detection system consisting of a combined visible and Short Wave Infra-Red (SWIR) camera that identifies vehicle identification number and *the number of occupants in a given vehicle*"). Thus, Agrawal is analogous art.

While an alternative may be inferior to or less desirable than another, that alone is insufficient to teach away from the inferior alternative unless the disclosure criticizes, discredits, or otherwise discourages that alternative. *In re Fulton*, 391 F.3d 1195, 1200–01 (Fed. Cir. 2004). Here, to the extent Agrawal cautions against using facial recognition due to privacy concerns, a mere lack of justification for facial recognition does not criticize, discredit, or otherwise discourage the use of facial recognition. *See* Agrawal ¶ 18 ("detailed image recognition is not warranted for privacy concerns.").

Finally, the Examiner provides a reason to combine the references that is rational on its face and supported by evidence drawn from the record. *See* Final Act. 14–15 (citing Fitzpatrick ¶¶ 65–68); *see also* Ans. 22–23 (citing Fitzpatrick ¶ 90). Appellants have not presented any additional particularized arguments as to why this reasoning is incorrect. Accordingly,

Appellants' arguments (iii) and (iv) do not show any error in the Examiner's findings and reasons in support of the conclusion of obviousness.

Regarding Appellants' argument (v), Fitzpatrick discloses "this method of estimating desired nominal component buffer level according to the present invention may drive production in proportion to current demand. *Subsequent methods may work to improve the convergence of this method's demand-curve following performance*." Fitzpatrick ¶ 204 (emphasis added). To the extent certain portions of Fitzpatrick describe the invention as an improvement over prior art techniques that use *only* historical customer data, Fitzpatrick's own technique suggests considering current demand, and additionally considering historical order information. *See* Fitzpatrick ¶ 204. Put another way, by "work[ing] to improve the convergence," Fitzpatrick suggests that subsequent methods consider historical as well as current demand. Fitzpatrick ¶ 204.

Accordingly, we sustain the Examiner's rejection of independent claim 17.

ORDER

Because we have sustained one ground of rejection for claim 17, the Examiner's decision rejecting claim 17 is affirmed.

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