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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/839,093	08/16/2024	Xueheng QIU	P00135USX (G39.083)	3139

193994 7590 05/01/2025

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ART UNIT	PAPER NUMBER
3628	

NOTIFICATION DATE	DELIVERY MODE
05/01/2025	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):

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Office Action Summary	Application No. 18/839,093	Applicant(s) QIU et al.	
	Examiner CHRIS GOMEZ	Art Unit 3628	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 16 August 2024.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL.** 2b) ☑ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-20 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-20 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☑ The drawing(s) filed on 16 August 2024 is/are: a)☑ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☑ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☑ All b)☐ Some** c)☐ None of the:

1.☑ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)

2) ☑ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Status of Claims

2. This action is in reply to the application 18/839,093 filed on 8/16/2024. Claims 1-20 are pending. This action is non-final.

Claim Rejections - 35 USC § 112

3. The following is a quotation of 35 U.S.C. 112(b):
(b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 4 recites the limitation *each of the quantile regression neural networks* in lines 1-2. There is insufficient antecedent basis for this limitation in the claim. Claim 3 recites using *quantile regression* and different types of neural network, but does not specifically recite a *quantile regression neural network*. For examination purposes, Examiner will interpret the recited limitation *each of the quantile regression neural networks* as *a quantile regression neural network*.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claim 19 is rejected under 35 U.S.C. 101 because it is directed to non-statutory subject matter. The claim does not fall within at least one of the four categories of patent eligible subject matter because it is directed to software per se.

Claim 19 recites a computer program element. Computer program elements are considered products. Products that do not have a physical or tangible form, such as information (often referred to as "data per se") or a computer program per se (often referred to as "software per se") when claimed as a product without any structural recitations are not directed to any of the statutory categories, see MPEP 2106.03. While claim 19 does not fall within one of the four statutory categories, the claim has been analyzed (by way of the analysis of claim 1) below with respect to Step 2 for the sake of compact prosecution.

7. Claim 20 is rejected under 35 U.S.C. 101 because it is directed to non-statutory subject matter. The claim does not fall within at least one of the four categories of patent eligible subject matter because it is directed to signals per se.

Claim 20 recites a computer-readable medium. However, the claimed computer-readable medium is broad enough so as to comprise transitory computer-readable media. The only narrowing description of the claimed computer-readable medium occurs in para. [0025] of the specification where it is described at a high level. Specifically, the term “computer-readable medium” is not defined as non-transitory. Therefore, as stated above, the claimed computer-readable medium is broad enough so as to comprise transitory computer-readable media. Transitory forms of signal transmission (often referred to as “signals per se”) are not directed to any of the statutory categories, see MPEP 2106.03. While claim 20 does not fall within one of the four statutory categories, the claim has been analyzed (by way of the analysis of claim 1) below with respect to Step 2 for the sake of compact prosecution.

8. Claims 1-20 are rejected under 35 U.S.C. 101 because the claimed invention is directed to an abstract idea without significantly more.

9. **Step 1:** Claims 1, 18, 19, and 20 recite a method, a server, a computer program element, and a computer-readable medium for performing: *A method for forecasting a delivery fare and determining a batching possibility prediction-based dynamic discount for a scheduled order of a goods delivery service, the method comprising: predicting a delivery fare for a scheduled delivery in an available time slot; predicting a batching rate for the scheduled delivery to be batched with at least one other order in the available time slot; determining a discount for the scheduled delivery in the available time slot, based on the predicted batching rate; determining a final delivery fare for the scheduled delivery in the available time slot, based on the predicted delivery fare and the determined discount; and displaying the determined final delivery fare for user selection of the scheduled delivery.* Therefore, claims 1 and 18 are each directed to one of the four statutory categories of invention: a method and a system, respectively. As mentioned above, for the sake of compact prosecution, claims 19 and 20 will be analyzed below as if they were directed to the 'article of manufacture' statutory category of invention.

Step 2A – Prong One: The claim limitations *[a] method for forecasting a delivery fare and determining a batching possibility prediction-based dynamic discount for a scheduled order of a goods delivery service, the method comprising: predicting a delivery fare for a scheduled delivery in an available time slot; predicting a batching rate for the scheduled delivery to be batched with at least one other order in the available time slot; determining a discount for the scheduled delivery in the available time slot, based on the predicted batching rate; determining a final delivery fare for the scheduled delivery in the available time slot, based on the predicted delivery fare and the determined discount; and displaying the determined final delivery fare for user selection of the scheduled delivery,* as drafted, is a method that, under its broadest reasonable interpretation,

only covers concepts which may be categorized as "Certain Methods of Organizing Human Activity" (e.g., commercial interaction – business relations; fundamental economic practices (e.g., shipping/logistics)) and "Mathematical Concepts" (e.g., mathematical relationships). That is, nothing in the claim discloses anything outside the grouping of "Certain Methods of Organizing Human Activity" (e.g., commercial interaction – business relations; fundamental economic practices (e.g., shipping/logistics)) and "Mathematical Concepts" (e.g., mathematical relationships). Accordingly, the claim recites an abstract idea.

Step 2A – Prong Two: The judicial exception is not integrated into a practical application. The claims as a whole merely describes how to generally "apply" the concept of the aforementioned abstract idea using *a server* (claim 18), *one or more processors* (claims 19 and 20), and *a computer-readable medium* (claim 20). The claimed components are recited at a high level of generality and are merely invoked as generic computer components to perform the aforementioned abstract idea. Simply implementing the abstract idea on a generic computerized system is not a practical application of the abstract idea. Accordingly, the aforementioned additional elements do not integrate the abstract idea into a practical application. The claim is directed to an abstract idea.

Step 2B: The claims do not include additional elements that are sufficient to amount to significantly more than the judicial exception. As discussed above, the claims as a whole merely describe how to generally "apply" the aforementioned abstract idea using generic computer components. The additional elements *a server* (described in spec. para. [0043]), *one or more processors* (described in spec. para. [0093]), and *a computer-readable medium* (described in spec. para. [0025]) are recited at a high level of generality and are merely invoked as a tool to perform the aforementioned abstract idea. The additional elements are described at a high-level indicating the known nature of each of these additional elements in the art. Simply implementing the

abstract idea on a generic computerized system does not amount to significantly more than the judicial exception. Thus, even when viewed as a whole, nothing in the claims add significantly more to the abstract idea. Therefore the claims are not patent eligible.

10. Claims 2-17 have been given the full two part analysis including analyzing the limitations both individually and in combination. Claims 2-17 when analyzed individually, and in combination, are also held to be patent ineligible under 35 U.S.C. 101. The recited limitations of the dependent claims fail to establish that the claims do not recite an abstract idea because the recited limitations of the dependent claims merely further narrow the abstract idea.

Step 2A – Prong Two: The limitations of the dependent claims fail to integrate an abstract idea into a practical application because the claims as a whole merely describe how to generally "apply" the aforementioned abstract idea. Specifically, the claims as a whole merely describes how to generally "apply" the concept of the aforementioned abstract idea using *a display* (claim 17). The claimed components are recited at a high level of generality and are merely invoked as generic computer components to perform the aforementioned abstract idea. Simply implementing the abstract idea on a generic computerized system is not a practical application of the abstract idea. Accordingly, the aforementioned additional elements do not integrate the abstract idea into a practical application. Furthermore, claims 3-4, and 9 recite the limitations *quantile regression* (claim 3), *linear regression* (claim 3), *lasso regression* (claim 3), *support vector regression* (claim 3), *a multilayer perceptron neural network* (claim 3), *a long short-term memory neural network* (claim 3), *a decision tree-based algorithm* (claim 3), *quantile regression neural networks* (claim 4), *a multiple hidden layer feedforward neural network that is trained with historical data and a quantile loss* (claim 4), and *a neural network with long short-term memory (LSTM) layers that is trained with historical data* (claim 9). These limitations are directed to mental processes and mathematical concepts and are therefore part of the abstract idea, and not

additional elements. In support of this position, Examiner cites the USPTO's July 2024 Subject Matter Eligibility Examples. Specifically, Examiner argues that the aforementioned limitations of claims 3-4 and 9 are analogous to the artificial neural network (ANN) described in Example 47 Claim 2. The USPTO's analysis examines the mere use of the ANN in the following way: "The limitations in (d) and (e) reciting "using the trained ANN" provide nothing more than mere instructions to implement an abstract idea on a generic computer. See MPEP 2106.05(f)." In the instant claims there is no recited generic computer, so the use of *quantile regression* (claim 3), *linear regression* (claim 3), *lasso regression* (claim 3), *support vector regression* (claim 3), *a multilayer perceptron neural network* (claim 3), *a long short-term memory neural network* (claim 3), *a decision tree-based algorithm* (claim 3), *quantile regression neural networks* (claim 4), *a multiple hidden layer feedforward neural network* (claim 4), and *a neural network with long short-term memory (LSTM) layers* (claim 9) are merely part of the abstract idea, and do not comprise additional elements. The limitations *a multiple hidden layer feedforward neural network that is trained with historical data and a quantile loss* (claim 4), and *a neural network with long short-term memory (LSTM) layers that is trained with historical data* (claim 9) describe more than just the mere use of algorithms. These limitations also describe training the algorithms. However, these limitations are also considered part of the abstract idea. In support of this position, Examiner cites the USPTO's July 2024 Subject Matter Eligibility Examples. Specifically, Examiner argues that the aforementioned limitations of claims 4 and 9 are analogous to the training of the artificial neural network (ANN) described in Example 47 Claim 2. The USPTO's analysis examines the training of the ANN in the following way: "Step (c) requires specific mathematical calculations (a backpropagation algorithm and a gradient descent algorithm) to perform the training of the ANN and therefore encompasses mathematical concepts ... Further, [limitation] ... (c) [is] recited as being performed by a computer. The computer is recited at a high level of generality ... In

[limitation] ... (c), the computer is used to perform an abstract idea, as discussed above in Step 2A, Prong One, such that it amounts to no more than mere instructions to apply the exception using a generic computer. See MPEP 2106.05(f)." In the instant claims there is no recited generic computer, so the use of *a multiple hidden layer feedforward neural network that is trained with historical data and a quantile loss* (claim 4), and *a neural network with long short-term memory (LSTM) layers that is trained with historical data* (claim 9) are merely part of the abstract idea, and do not comprise additional elements. Therefore, in conclusion, the only additional elements of claims 2-17 is *a display* recited in claim 17, which, as described above, is considered part of a generic computer environment upon which the abstract idea is merely "applied." Therefore, the claims are directed to an abstract idea.

Step 2B: The claim does not include additional elements that are sufficient to amount to significantly more than the judicial exception. The additional elements of *a display* (described in spec. para. [0081]) are described in the specification at a high-level indicating the known nature of each of these additional elements in the art. As discussed above, the claim as a whole merely describes how to generally "apply" the concept of the abstract idea using a generic computer environment comprising the use of generic machine learning models. Thus, even when viewed as a whole, nothing in the claim adds significantly more to the abstract idea. Therefore, the claim is not patent eligible.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the

claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

12. (**Examiner's Note:** Claims 4-8 and 10-15 are not rejected under 35 USC § 102 or 35 USC § 103. Examiner has determined that it would not have been obvious to one of ordinary skill in the art before the time of filing to combine prior art to arrive at the limitations claimed in claims 4-8 and 10-15.)

13. Claims 1 and 16-20 are rejected under 35 U.S.C. 103 as being unpatentable over Kumar (U.S. Pat. No. 10,740,715) in view of Sahay (U.S. Pub. No. 2019/0122245).

14. Regarding claims 1, 18, 19, and 20, Kumar discloses the following limitations:

a. *A method for forecasting a delivery fare and determining a batching possibility prediction-based dynamic discount for a scheduled order of a goods delivery service, the method comprising:* [See [Col. 2, lines 26-46]; Kumar teaches a first user creating an order for food from a local restaurant and being presented with an expected delivery fee (i.e., *A method for forecasting a delivery fare*). Kumar further teaches that the first user can invite other nearby buyers to place an order that may be combined with the first order created by the first user. Kumar further teaches that if other users place an order in this way, the orders will be combined and the delivery fee will be discounted for each user. Kumar [Col. 4, lines 11-18]; (Fig. 2, elements 228, 230) further teaches that the first user may extend the invitation to combine orders over a specified time limit. Kumar [Col. 17, lines 60-67] further teaches that the delivery fee will be divided evenly among the users who decide to accept the invitation and combine orders with the first user. Therefore, Kumar teaches that the delivery fee is dynamically discounted as more users decide to accept the first user's invitation and participate in the combined order offer (i.e., *determining a batching possibility prediction-based dynamic discount for a scheduled order of a goods delivery service*).]

b. (Regarding claim 18) *A server configured to perform the method of claim 1.* [See [Col. 24, lines 38-49]; (Fig. 7, element 102); Kumar teaches that the service computing device 102 used to implement the system's functions may be a server.]

c. (Regarding claim 19) *A computer program element comprising program instructions, which, when executed by one or more processors, cause the one or more processors to perform the method of claim 1.* [See [Col. 24, line 64 – Col. 25, line 15]; (Fig. 7); Kumar teaches that the service computing device 102 used to implement the system's functions comprises at least one processor 702 for executing computer-readable instructions stored on a computer-readable medium 704.]

d. (Regarding claim 20) *A computer-readable medium comprising program instructions, which, when executed by one or more processors, cause the one or more processors to perform the method of claim 1.* [See [Col. 24, line 64 – Col. 25, line 15]; (Fig. 7); Kumar teaches that the service computing device 102 used to implement the system's functions comprises at least one processor 702 for executing computer-readable instructions stored on a computer-readable medium 704.]

e. *predicting a delivery fare for a scheduled delivery in an available time slot;* [See [Col. 13, lines 45-64]; (Fig. 2, element 220); Kumar teaches presenting a first user with an expected delivery fee (i.e., *predicting a delivery fare for a scheduled delivery*) for a first food delivery, which may be placed by a first user. Kumar further teaches that the first user may select graphical user interface element 228 in order to attempt to reduce the delivery fee by allowing other orders to be combined with this order. Kumar further teaches that the first user may also select the GUI element 230 in order to specific a time period within which other orders may be combined with the first order (i.e., *an available time slot*). Kumar [Col. 17, lines 60-67] further teaches that the delivery fee may be divided evenly among participants in the combined order. Kumar [Col. 4, lines

43-54] teaches presenting a second user with an offer of a discounted delivery fee if they place an order from a merchant within the time specified by the first user (i.e., *predicting a delivery fare for a scheduled delivery in an available time slot*).]

f. *predicting a batching rate for the scheduled delivery to be batched with at least one other order in the available time slot;* [See [Col. 13, lines 45-64]; (Fig. 2, element 220); Kumar teaches presenting a first user with an expected delivery fee for a first food delivery, which may be placed by a first user. Kumar further teaches that the first user may select graphical user interface element 228 in order to attempt to reduce the delivery fee by allowing other orders to be combined with this order. Kumar further teaches that the first user may also select the GUI element 230 in order to specific a time period within which other orders may be combined with the first order (i.e., *the available time slot*). Kumar [Col. 17, lines 60-67] further teaches dividing the delivery fee evenly among participants in the combined order offer. Therefore, if the first user gets one other user to combine orders with them (i.e., *batching rate*), the delivery fee will be halved; if the first user gets two other users to combine orders (i.e., *batching rate*), the delivery fee will be 1/3; etc. Therefore, the final delivery fee will be estimated until the user-set time period closes and the total number of participants is known (i.e., *predicting a batching rate for the scheduled delivery to be batched with at least one other order in the available time slot*). Kumar [Col. 4, lines 43-54] teaches presenting a second user with an offer of a discounted delivery fee if they place an order from a merchant within the time specified by the first user (i.e., *predicting a batching rate for the scheduled delivery to be batched with at least one other order in the available time slot*).]

g. *determining a discount for the scheduled delivery in the available time slot, based on the predicted batching rate;* [See [Col. 13, lines 45-64]; (Fig. 2, element 220); Kumar teaches presenting a first user with an expected delivery fee for a first food delivery, which may be placed

by a first user. Kumar further teaches that the first user may select graphical user interface element 228 in order to attempt to reduce the delivery fee by allowing other orders to be combined with this order. Kumar further teaches that the first user may also select the GUI element 230 in order to specific a time period within which other orders may be combined with the first order (i.e., *the available time slot*). Kumar [Col. 17, lines 60-67] further teaches dividing the delivery fee evenly among participants in the combined order offer. Therefore, if the first user gets one other user to combine orders with them, the delivery fee will be halved (i.e., *a discount for the scheduled delivery in the available time slot*); if the first user gets two other users to combine orders, the delivery fee will be 1/3 (i.e., *a discount for the scheduled delivery in the available time slot*); etc. Therefore, the final delivery fee will be estimated until the user-set time period closes and the total number of participants is known (i.e., *determining a discount for the scheduled delivery in the available time slot, based on the predicted batching rate*). Kumar [Col. 4, lines 43-54] teaches presenting a second user with an offer of a discounted delivery fee if they place an order from a merchant within the time specified by the first user (i.e., *determining a discount for the scheduled delivery in the available time slot, based on the predicted batching rate*).]

h. *determining a final delivery fare for the scheduled delivery in the available time slot, based on the predicted delivery fare and the determined discount;* [See [Col. 13, lines 45-64]; (Fig. 2, element 220); Kumar teaches presenting a first user with an expected delivery fee for a first food delivery, which may be placed by a first user. Kumar further teaches that the first user may select graphical user interface element 228 in order to attempt to reduce the delivery fee by allowing other orders to be combined with this order. Kumar further teaches that the first user may also select the GUI element 230 in order to specific a time period within which other orders may be combined with the first order (i.e., *the available time slot*). Kumar [Col. 17, lines 60-67] further

teaches dividing the delivery fee evenly among participants in the combined order offer. Therefore, if the first user gets one other user to combine orders with them, the delivery fee will be halved (i.e., *a discount for the scheduled delivery in the available time slot*); if the first user gets two other users to combine orders, the delivery fee will be 1/3 (i.e., *a discount for the scheduled delivery in the available time slot*); etc. Therefore, the final delivery fee will be estimated until the user-set time period closes and the total number of participants is known (i.e., *determining a final delivery fare for the scheduled delivery in the available time slot, based on the predicted delivery fare and the determined discount*). Kumar [Col. 4, lines 43-54] teaches presenting a second user with an offer of a discounted delivery fee if they place an order from a merchant within the time specified by the first user (i.e., *determining a final delivery fare for the scheduled delivery in the available time slot, based on the predicted delivery fare and the determined discount*).]

Although Kumar teaches displaying an initial delivery fee, displaying offers of discounted delivery fees, and determining a final delivery fee for each user based on their participation in a combined order, Kumar does not explicitly teach displaying the final delivery fee for the approval of each user. Therefore, Kumar does not, however Sahay does, explicitly disclose the following limitations:

i. *and displaying the determined final delivery fare for user selection of the scheduled delivery.* [See [0096]; (Fig. 6C, elements 611, 612); (Fig. 6E, elements 611, 612, 614); Sahay teaches that a user may select different delivery options which offer different delivery cost discounts. For example, (Fig. 6E) presents a user with three delivery cost options: (614) the user may pay an extra $8.99 to receive the order Thu. Mar. 2; (611) the user may pay no delivery fee to receive the order Fri. Mar. 3; or (612) the user save $1.50 on their order to receive the order Fri. Mar. 10. Sahay further teaches in (Fig. 6E, element 650) displaying the total final delivery fee for the entire

order based on the delivery cost options selected for each portion of the order (i.e., *and displaying the determined final delivery fare for user selection of the scheduled delivery*).]

It would have been obvious to one of ordinary skill in the art before the time of filing to combine the delivery discount system of Kumar with the delivery discount system of Sahay. By making this combination, the delivery discount system of Kumar would be able to more clearly communicate potential discounts to all of the users involved in the combined order. For example, the first user of Kumar would be able to open a time window for others to join on a combined order. This first user could then be presented with the option to close the window and place the order with the current discount applied, whatever that may be, or leave the window open for a longer period of time. This is similar to the method described in Kumar [Col. 11, lines 43-65] in which a user has the opportunity to place an order without a discount or extend the time in which others may join for a combined order.

15. Regarding claim 16, Kumar in view of Sahay disclose all claim 1 limitations. Kumar further discloses the following limitations:

a. *wherein the final delivery fare is determined using an equation comprising: Final Fare = Predicted Fare * (1 - Discount), where Predicted Fare is the predicted delivery fare, and Discount is the determined discount.* [See [Col. 17, lines 60-67] Kumar teaches that the original expected delivery fee 220 shown on (Fig. 2) will be divided evenly between all participants in a combined order. For example this means that if there are two participants the discount is 50%, meaning the final fare will be the original expected delivery fee (i.e., *Predicted Fare*) times 1 – 0.5. This means that the final fare is 50% of the original expected delivery fee. To use another example, if there are three participants, the discount is 67%, meaning the final fare will be the original expected delivery fee times 1 – 0.67. This means the final fare is 33% of the original expected delivery fee.

(**Examiner's Note:** As currently written, this claim merely describes the way all discounts are applied to prices.)]

16. Regarding claim 17, Kumar in view of Sahay disclose all claim 1 limitations. Kumar does not, however Sahay does, disclose the following limitations:

j. *wherein the determined final delivery fare is displayed with the available time slot on a display, and is highlighted when selected by a user.* [See [0096]; (Fig. 6C, elements 611, 612); (Fig. 6E, elements 611, 612, 614); Sahay teaches that a user may select different delivery options which offer different delivery cost discounts. For example, (Fig. 6E) presents a user with three delivery cost options: (614) the user may pay an extra $8.99 to receive the order Thu. Mar. 2; (611) the user may pay no delivery fee to receive the order Fri. Mar. 3; or (612) the user save $1.50 on their order to receive the order Fri. Mar. 10. Sahay (Fig. 6E) further shows the selected delivery time and the associated price selected by a user marked with a filled circle next to it (i.e., *wherein the determined final delivery fare is displayed with the available time slot on a display, and is highlighted when selected by a user*). Sahay further teaches in (Fig. 6E, element 650) displaying the total final delivery fee for the entire order based on the delivery cost options selected for each portion of the order.]

It would have been obvious to one of ordinary skill in the art before the time of filing to combine the delivery discount system of Kumar with the delivery discount system of Sahay. By making this combination, the delivery discount system of Kumar would be able to more clearly communicate potential discounts to all of the users involved in the combined order. For example, the first user of Kumar would be able to open a time window for others to join on a combined order. This first user could then be presented with the option to close the window and place the order with the current discount applied, whatever that may be, or leave the window open for a longer period of time. This is similar to the method described in Kumar [Col. 11, lines 43-65] in

which a user has the opportunity to place an order without a discount or extend the time in which others may join for a combined order.

17. Claim 2 is rejected under 35 U.S.C. 103 as being unpatentable over Kumar (U.S. Pat. No. 10,740,715) in view of Sahay (U.S. Pub. No. 2019/0122245) in view of Marueli (U.S. Pub. No. 2021/0287238).

18. Regarding claim 2, Kumar in view of Sahay disclose all claim 1 limitations. Kumar further discloses the following limitations:

a. *The method of claim 1, wherein the predicting the delivery fare comprises: obtaining ... an origin for the scheduled delivery ... a destination for the scheduled delivery, the available time slot, a base fare or tier base fare for the scheduled delivery ...* [See [Col. 9, lines 33-45] Kumar teaches receiving orders from customers, the order information 148 comprising the merchant pickup location 124 (i.e., *an origin for the scheduled delivery*) and the delivery location 126 (i.e., *a destination for the scheduled delivery*). Kumar [Col. 11, lines 43-65] further teaches that the expected delivery fee is based on the number of customers participating in a combined order, which is based on the first user opening a period of time (i.e., *available time slot*) for other customers to participate in the combined order. Kumar [Col. 17, lines 60-67]; (Fig. 2, element 220); further teaches the base delivery fee 220 (i.e., *a base fare or tier base fare for the scheduled delivery*) being split evenly amongst participants in the combined order.]

b. *and predicting the delivery fare for the scheduled delivery in the available time slot, based on the obtained ... origin, the obtained ... destination, the obtained available time slot, the obtained base fare or tier base fare ...* [See [Col. 9, lines 33-45] Kumar teaches receiving orders from customers, the order information 148 comprising the merchant pickup location 124 and the delivery location 126. Kumar [Col. 5, lines 1-15] further teaches that orders may only be combined

if they are placed at merchants within a threshold distance from each other (i.e., *and predicting the delivery fare for the scheduled delivery ... based on the obtained ... origin*). Kumar [Col. 4, lines 11-18] further teaches that orders may only be combined if they for customers with delivery locations within a threshold distance from each other (i.e., *and predicting the delivery fare for the scheduled delivery ... based on the obtained ... destination*). Kumar [Col. 11, lines 43-65] further teaches that the expected delivery fee is based on the number of customers participating in a combined order, which is based on the first user opening a period of time (i.e., *available time slot*) for other customers to participate in the combined order. Kumar [Col. 17, lines 60-67]; (Fig. 2, element 220); further teaches the base delivery fee 220 (i.e., *and predicting the delivery fare for the scheduled delivery ... based on ... the obtained base fare or tier base fare ...*) being split evenly amongst participants in the combined order.]

Kumar in view of Sahay does not, however Marueli does, disclose the following limitations:

c. *... coordinates of an origin ... coordinates of a destination ...* [See [0021] Marueli teaches pick-up locations and destination locations may be specified in any suitable format, such as GPS coordinates.]

d. *wherein the predicting the delivery fare comprises: obtaining ... a surge rate range; and predicting the delivery fare for the scheduled delivery in the available time slot, based on ... the obtained surge rate.* [See [0127-0128]; Marueli teaches determining the total fare for a transportation request (i.e., *predicting the delivery fare*). Marueli further teaches using a surge cap (i.e., *surge rate range*) to limit the impact surge pricing will have on the total fare (i.e., *wherein the predicting the delivery fare comprises: obtaining ... a surge rate range; and predicting the delivery fare for the scheduled delivery in the available time slot, based on ... the obtained surge rate*).]

It would have been obvious to one of ordinary skill in the art before the time of filing to combine the delivery fare calculation system of Kumar in view of Sahay with the delivery fare calculation system of Marueli. By making this combination, the system of Kumar in view of Sahay would be able to allow a delivery provider to charge more for urgent delivery when there is high demand for delivery services. This is similar to the example shown in Sahay (Fig. 6E) where the user interface presents a user with the delivery cost options: (614) the user may pay an extra $8.99 to receive the order Thu. Mar. 2 (i.e., charge more for urgent delivery when there is high demand for delivery services); or (611) the user may pay no delivery fee to receive the order Fri. Mar. 3.

19. Claims 3 and 9 are rejected under 35 U.S.C. 103 as being unpatentable over Kumar (U.S. Pat. No. 10,740,715) in view of Sahay (U.S. Pub. No. 2019/0122245) in view of Xiong (Chinese Pub. No. CN 114049144 A).

20. Regarding claim 3, Kumar in view of Sahay disclose all claim 1 limitations. Although Kumar in view of Sahay teaches estimating a delivery fare using algorithms (described at a high level in Kumar [Col. 25, lines 8-15]), Kumar in view of Sahay does not teach using any of the specific algorithms in this claim. Therefore, Kumar in view of Sahay does not, however Xiong does, disclose the following limitations:

a. *... wherein the delivery fare is predicted using at least one among quantile regression, linear regression, lasso regression, support vector regression, a multilayer perceptron neural network, a long short-term memory neural network, and a decision tree-based algorithm.* [See [pg. 6] Xiong teaches estimating the transportation cost for shipping items (i.e., *the delivery fare is predicted*). Xiong teaches that the system uses the following algorithms as part of its process:

linear regression (see [pg. 2]), a long short-term memory neural network (see [pg. 4]), and a decision tree-based algorithm (see [pg. 5]).]

It would have been obvious to one of ordinary skill in the art before the time of filing to combine the delivery fee estimation system of Kumar in view of Sahay with the delivery fee estimation system of Xiong. By making this combination, Kumar in view of Sahay would be able to compare the results and historical performance of their algorithms (described at a high level in Kumar [Col. 25, lines 8-15]) with the results and historical performance of specific and accurate linear regression algorithms, long short-term memory neural networks, and decision tree-based algorithms of Xiong. A user of Kumar in view of Sahay would then be able to use the algorithm that provides the most accurate results.

21. Regarding claim 9, Kumar in view of Sahay disclose all claim 1 limitations. Although Kumar in view of Sahay teaches estimating a "batching rate" using algorithms (described at a high level in Kumar [Col. 25, lines 8-15]), Kumar in view of Sahay does not teach using any of the specific algorithms in this claim. Therefore, Kumar in view of Sahay does not, however Xiong does, disclose the following limitations:

a. *... using a neural network with long short-term memory (LSTM) layers that is trained with historical data.* [See [pg. 6] Xiong teaches estimating the transportation cost for shipping items. Xiong teaches that the system uses the following algorithms as part of its process a long short-term memory neural network (see [pg. 4]).]

It would have been obvious to one of ordinary skill in the art before the time of filing to combine the delivery fee estimation system of Kumar in view of Sahay with the delivery fee estimation system of Xiong. By making this combination, Kumar in view of Sahay would be able to compare the results and historical performance of their algorithms (described at a high level in Kumar [Col. 25, lines 8-15]) with the results and historical performance of a specific and accurate

long short-term memory neural network of Xiong. A user of Kumar in view of Sahay would then be able to use the algorithm that provides the most accurate results.

Prior Art

22. The following prior art is relevant to the claimed invention but was not used in prior art rejections:

a. Mishra (U.S. Pub. No. 2022/0253801) – Piece versus multi-piece carrier optimization

b. Lye (U.S. Pub. No. 2021/0082074) – Allocation of dynamically batched service providers and service requesters

c. Loppatto (U.S. Pub. No. 2015/0363843) – Dynamic provisioning of pick-up, delivery, transportation and/or sortation options

Conclusion

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRIS GOMEZ whose telephone number is (571) 272-0926. The examiner can normally be reached on 7:30 AM – 4:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, SHANNON CAMPBELL can be reached at (571) 272-5587. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/CHRISTOPHER GOMEZ/

Examiner, Art Unit 3628