Some of the embodiments described above, particularly those which involve the order being reallocated to a second delivery driver, are implemented taking into account whether the order has been collected by the delivery driver. Thus, if the order has already been collected, it may not be reallocated to a second delivery driver. However, other aspects may be implemented even after an order has been collected, for example updating the estimated time of delivery or sending a notification to the delivery driver.

In some embodiments, the method further comprises receiving a complaint indication indicating that the delivery was not delivered within an estimated time of delivery and updating the statistical model.

In some embodiments, the method further comprises receiving a complaint indication indicating that the order was incorrectly reallocated and updating the statistical model.

When complaints are received from a customer, this indicates that an issue was caused potentially by the lateness of a delivery and the statistical model is updated accordingly. Similarly, if a complaint is received from a delivery driver, this may indicate that a delivery task was incorrectly reallocated away from the delivery driver and the statistical model is updated to avoid reallocation in such scenarios in the future.

In an embodiment, the statistical model is a multivariate classification model.

According to a second aspect of the present disclosure, a computer readable carrier medium is provided. The computer readable carrier medium carries processor executable instructions which when executed on a processor cause the processor to carry out a method as set out above

According to a third aspect of the present disclosure, an online order processing system for processing an order is provided. The order comprises an indication of a merchant location at which ~~at~~ an order item is to be picked up and an indication of a delivery location at which the order item is to be delivered, the order having a current estimated time of delivery. The online order processing system comprises: a processor, data storage, and program storage, the data storage storing a statistical model trained

on historical driver and order variables, the statistical model being configured to predict a probability that the delivery driver will deliver the order within an estimated time of delivery, the program storage storing computer program instructions operative by the processor to: receive current delivery driver information relating to a delivery driver assigned to deliver the order; look up delivery driver data relating to the delivery driver assigned to deliver the order and order variables relating to the order and the merchant; input the current delivery driver information, the delivery driver data and the order variables into the statistical model; and determine an indication of the probability that the delivery driver assigned to deliver the order will deliver the delivery within the current estimated time of delivery.

In an embodiment, the program storage stores computer program instructions operative by the processor to: if the probability that the delivery driver assigned to deliver the order will deliver the delivery within the current estimated time of delivery is below a first threshold, determine a new estimated time of delivery and sending an indication of the new estimated time of delivery to a customer device associated with the order.

In an embodiment, the program storage stores computer program instructions operative by the processor to: if the probability that the delivery driver assigned to deliver the order will deliver the delivery within the current estimated time of delivery is below a second threshold, reallocating the order to a second delivery driver.

In an embodiment, the program storage stores computer program instructions operative by the processor to: if the probability that the delivery driver assigned to deliver the order will deliver the delivery within the current estimated time of delivery is above a first threshold and below a third threshold, send a notification to the delivery driver assigned to deliver the order.

Thus, if the probability of driver inactivity is very high, the delivery gets reallocated to another driver with change of estimated time. If the probability is lower, the customer receives an updated delivery time and if ~~if~~ the probability of inactivity is not very high but not low either it gets as a soft reminder to the driver through a push notification

In step 314, the updated estimated time of arrival calculated in step 312 is sent to the customer device 152 by the network interface 114 of the online order processing system 100.

In step 316, a reminder notification is generated and sent to the first delivery driver.

If the order is wrongly assigned to another driver, this may result in complaints from the first delivery driver. Customers may also make complaints if orders are received after the estimated time of delivery. These complaints may indicate occasions in which the prediction model 138 incorrectly predicts the estimated time of arrival and may be used to update or retrain the predictive model 138.

FIG.4 is a flowchart showing a method of updating a prediction model according to an embodiment of the present invention. The method 400 shown in FIG.4 is carried out by the online order processing system 100 shown in FIG.2.

In step 402, a customer complaint indication is received by the network interface module 114 of the online order processing system 100. The complaint indication may indicate that an order was received outside the predicted estimated time of arrival. In step 408, the module update module 128 is executed by the processor 110 of the online order processing system 100 to update the prediction model 138.

In step 404, a driver complaint indication is received by the network interface module 114 of the online order processing system 100. The complaint indication may indicate that an order was incorrectly transferred away from a delivery driver. In step 406, the model update module 128 is executed by the processor to filter received complaints. The filtering of complaints may comprise interrogating the delivery driver data 134 to determine an indication of whether the delivery driver is trustworthy. For example, if the delivery driver has abandoned deliveries frequently in the past, and any fraud signal that is marked against the driver this may indicate that the delivery driver is not trustworthy. Once complaints from untrustworthy delivery drivers has been filtered out, the method proceeds to step 408. In step 408, the module update module 128 is executed by the processor 110 of the online order processing system 100 to update the prediction model 138. The model is retrained here by updating the records with the

CLAIMS

1. An online order processing method, in an online order processing system for processing an order, the order comprising an indication of a merchant location at which ~~at~~ an order item is to be picked up and an indication of a delivery location at which the order item is to be delivered, the order having a current estimated time of delivery, a first delivery driver being assigned to deliver the order, the method comprising:

receiving, by the online order processing system, current delivery driver information relating to ~~a~~ the first delivery driver ~~assigned to deliver the order~~, the current delivery driver information comprising an indication of a speed and a location of a device associated with the first delivery driver;

looking up, by the online order processing system, delivery driver data relating to the first delivery driver ~~assigned to deliver the order~~ and order variables relating to the order and the merchant;

inputting, by the online order processing system, the current delivery driver information, the delivery driver data and the order variables into a statistical model trained on historical driver and order variables, the statistical model being configured to predict a probability that the first delivery driver will deliver the order within an estimated time of delivery; ~~and~~

~~determining~~generating, by the online order processing system, an indication of the probability that the first delivery driver ~~assigned to deliver the order~~ will deliver the delivery within the current estimated time of delivery; and

if the probability that the first delivery driver will deliver the delivery within the current estimated time of delivery is below a second threshold, reallocating, by the online order processing system, the order to a second delivery driver.

2. A method according to claim 1, further comprising:

if the probability that the first delivery driver ~~assigned to deliver the order~~ will deliver the delivery within the current estimated time of delivery is below a first threshold, determining, by the online order processing system, a new estimated time of delivery and sending an indication of the new estimated time of delivery to a customer device associated with the order.

~~3. A method according to claim 1, further comprising:~~

~~if the probability that the delivery driver assigned to deliver the order will deliver the delivery within the current estimated time of delivery is below a second threshold, reallocating the order to a second delivery driver.~~

~~4~~3. A method according to claim 1, further comprising:

if the probability that the first delivery driver ~~assigned to deliver the order~~ will deliver the delivery within the current estimated time of delivery is above a first threshold and below a third threshold, sending, by the online order processing system, a notification to the first delivery driver ~~assigned to deliver the order~~.

~~5~~4. A method according to any preceding claim, further comprising receiving a complaint indication from a customer indicating that the delivery was not delivered within an estimated time of delivery and updating the statistical model.

~~6~~5. A method according to claim ~~3~~1, further comprising receiving a complaint indication from a delivery driver indicating that the order was incorrectly reallocated and updating the statistical model.

~~7~~6. A method according to any preceding claim, wherein the statistical model is a multivariate classification model.

~~8~~7. A computer readable carrier medium carrying processor executable instructions which when executed on a processor cause the processor to carry out a method according to any one of claims 1 to ~~7~~6.

~~9~~8. An online order processing system for processing an order, the order comprising an indication of a merchant location at which ~~at~~ an order item is to be picked up and an indication of a delivery location at which the order item is to be delivered, the order having a current estimated time of delivery, a first delivery driver being assigned to deliver the order, the online order processing system comprising a processor, data storage, and program storage, the data storage storing a statistical

model trained on historical driver and order variables, the statistical model being configured to predict a probability that ~~the~~ a delivery driver will deliver the order within an estimated time of delivery, the program storage storing computer program instructions operative by the processor to:

~~R~~receive current delivery driver information relating to ~~a~~ the first delivery driver ~~assigned to deliver the order~~, the current delivery driver information comprising an indication of a speed and a location of a device associated with the first delivery driver;

look up delivery driver data relating to the first delivery driver ~~assigned to deliver the order~~ and order variables relating to the order and the merchant;

input the current delivery driver information, the delivery driver data and the order variables into the statistical model; ~~and~~

~~determine~~ generate an indication of the probability that the first delivery driver ~~assigned to deliver the order~~ will deliver the delivery within the current estimated time of delivery; and

if the probability that the first delivery driver will deliver the delivery within the current estimated time of delivery is below the second threshold, reallocate the order to a second delivery driver.

~~10~~9.An online order processing system according to claim ~~9~~8, wherein the program storage stores computer program instructions operative by the processor to: if the probability that the first delivery driver ~~assigned to deliver the order~~ will deliver the delivery within the current estimated time of delivery is below a first threshold, determine a new estimated time of delivery and sending an indication of the new estimated time of delivery to a customer device associated with the order.

~~11. An online order processing system according to claim 9, wherein the program storage stores computer program instructions operative by the processor to: if the probability that the delivery driver assigned to deliver the order will deliver the delivery within the current estimated time of delivery is below a second threshold, reallocate the order to a second delivery driver.~~

~~12~~10. An online order processing system according to claim ~~9~~8, wherein the program storage stores computer program instructions operative by the processor to:

if the probability that the first delivery driver ~~assigned to deliver the order~~ will deliver the delivery within the current estimated time of delivery is above a first threshold and below a third threshold, send a notification to the first delivery driver ~~assigned to deliver the order~~.

~~13~~11. An online order processing system according to any one of claims ~~9~~ 8 to ~~12~~10, wherein the program storage stores computer program instructions operative by the processor to: receive a complaint indication from a customer indicating that the delivery was not delivered within an estimated time of delivery and update the statistical model.

~~14~~12. An online order processing system according to claim ~~11~~8, wherein the program storage stores computer program instructions operative by the processor to: receive a complaint indication from a delivery driver indicating that the order was incorrectly reallocated and update the statistical model.

~~15~~13. An online order processing system according to any one of claims ~~9~~ 8 to ~~14~~12, wherein the statistical model is a multivariate classification model.