

SERVER AND METHOD FOR FACILITATING COMMUNICATING BETWEEN A PLURALITY OF DELIVERY SERVICE PROVIDERS

TECHNICAL FIELD

[0001] Various embodiments relate to a server and a method for facilitating communicating between a plurality of delivery service providers.

BACKGROUND

[0002] On-demand service provider (also referred to as “on-demand service platform provider”) may rely on up-to-date and accurate geographical map data. The geographical map data may include a map, for example, a digital map containing metadata information such as type of roads, number of lanes, road width, surface, bridge, tunnel, etc. A travel route of delivery service providers (also referred to as “delivery partners” or “drivers”) may be determined based on the map. The travel route of the delivery service providers may be affected by real-time information about the geographical map data, for example, traffic conditions or map errors. The delivery service providers may move along the travel route to provide an on-demand service, for example, a transport service or a delivery service, to users (also referred to as “customers”). Therefore, real-time map updates may often require the delivery service providers’ cooperation to report the traffic conditions or the map errors directly to the on-demand service provider. However, the delivery service providers may hesitate to report and/or may not be motivated to report the traffic conditions or the map errors to the on-demand service provider, as there may be little immediate gratification for their efforts.

[0003] In addition, even though the delivery service providers provide reports (also referred to as “feedback”) about the traffic conditions or the map errors, it may take a long time for the geographical map data to be updated. Therefore, there may have been a time-delay between when the reports are first made and when the other delivery service providers (also referred to as a “driver community”) benefits from the reports.

[0004] In some countries, for example, in developing countries, the delivery service providers may have no easy way of navigating to areas which are unmapped or where digital maps are outdated. Conventionally, such delivery service providers may have asked for directions from strangers along their travel route. Some delivery service providers may have used a walkie-talkie application to communicate with the other delivery service providers, but there may have been no connection to a central system which may take actions for the benefit of the delivery service providers outside of a channel or who has not heard of relevant messages.

[0005] Therefore, there is a need to provide a solution for facilitating communicating between a plurality of delivery service providers, in order to generate higher efficiencies in the transport service or the delivery service.

SUMMARY

[0006] According to various embodiments, there is a server for facilitating communicating between a plurality of delivery service providers, the server comprising: a memory configured to store instructions; a communication interface arranged in data communication with a plurality of computing devices each associated with the plurality of delivery service providers and configured to connect the plurality of computing devices to communicate with one another; and a processor for executing the stored instructions and configured to: obtain geographical information about orders assigned to each of the plurality of computing devices including a

first computing device; determine one or more computing devices that are geographically relevant to the first computing device from the plurality of computing devices, based on the geographical information about the orders assigned to each of the plurality of computing devices; and connect the first computing device with each of the one or more computing devices so that the first computing device communicates with each of the one or more computing devices while the first computing device moves along a travel route relating to an order assigned to the first computing device.

[0007] In some embodiments, the geographical information about orders assigned to each of the plurality of computing devices includes at least one of a current location, a location of a pick-up point, a location of a destination, and a travel route relating to the orders assigned to each of the plurality of computing devices.

[0008] In some embodiments, the communication interface is further configured to receive voice signal communicated between the first computing device and the one or more computing devices.

[0009] In some embodiments, the memory is further configured to store geographical map data which is accessible by the plurality of computing devices via the communication interface.

[0010] In some embodiments, the processor is further configured to: detect the received voice signal; determine if the detected voice signal includes information about the geographical map data; and if it is determined that the detected voice signal includes the information about the geographical map data, determine whether to use the information about the geographical map data included in the detected voice signal.

[0011] In some embodiments, the processor is further configured to: if it is determined that the detected voice signal includes the information about the geographical map data, transmit a message about a request for verification to at least one computing device of the plurality of computing devices; and determine whether to use the information about the geographical map

data included in the detected voice signal, based on a response message to the message about the request for verification.

[0012] In some embodiments, the processor is further configured to determine the at least one computing device from the plurality of computing devices, based on a current location of each of the plurality of computing devices.

[0013] In some embodiments, the processor is further configured to: if it is determined to use the information about the geographical map data included in the detected voice signal, update the geographical map data based on the information about the geographical map data included in the detected voice signal; and store the updated geographical map data in the memory, so that the plurality of computing devices access the updated geographical map data via the communication interface.

[0014] In some embodiments, the processor is further configured to: process the received voice signal; create at least one of a transcript and a summary report based on the processing of the received voice signal; and transmit the at least one of the transcript and the summary report to a computing device associated with an operator of the geographical map data, so that the geographical map data is updated by the operator.

[0015] In some embodiments, the processor is further configured to: if it is determined to use the information about the geographical map data included in the detected voice signal, broadcast the information about the geographical map data to at least a part of the plurality of computing devices that is geographically relevant to the information about the geographical map data.

[0016] According to various embodiments, there is a method for facilitating communicating between a plurality of delivery service providers, the method comprising: obtaining geographical information about orders assigned to each of a plurality of computing devices each associated with the plurality of delivery service providers, wherein the plurality of

computing devices include a first computing device; determining one or more computing devices that are geographically relevant to the first computing device from the plurality of computing devices, based on the geographical information about the orders assigned to each of the plurality of computing devices; and connecting the first computing device with each of the one or more computing devices so that the first computing device communicates with each of the one or more computing devices while the first computing device moves along a travel route relating to an order assigned to the first computing device.

[0017] In some embodiments, the geographical information about orders assigned to each of the plurality of computing devices includes at least one of a current location, a location of a pick-up point, a location of a destination, and a travel route relating to the orders assigned to each of the plurality of computing devices.

[0018] In some embodiments, the method further comprises receiving voice signal communicated between the first computing device and the one or more computing devices.

[0019] In some embodiments, the method further comprises storing, in a memory, geographical map data which is accessible by the plurality of computing devices via a communication interface.

[0020] In some embodiments, the method further comprises detecting the received voice signal; determining if the detected voice signal includes information about the geographical map data; and if it is determined that the detected voice signal includes the information about the geographical map data, determining whether to use the information about the geographical map data included in the detected voice signal.

[0021] In some embodiments, the method further comprises if it is determined that the detected voice signal includes the information about the geographical map data, transmitting a message about a request for verification to at least one computing device of the plurality of computing devices; and determining whether to use the information about the geographical map data

included in the detected voice signal, based on a response message to the message about the request for verification.

[0022] In some embodiments, the method further comprises determining the at least one computing device from the plurality of computing devices, based on a current location of each of the plurality of computing devices.

[0023] In some embodiments, the method further comprises if it is determined to use the information about the geographical map data included in the detected voice signal, updating the geographical map data based on the information about the geographical map data included in the detected voice signal; and storing the updated geographical map data in the memory, so that the plurality of computing devices access the updated geographical map data via the communication interface.

[0024] In some embodiments, the method further comprises processing the received voice signal; creating at least one of a transcript and a summary report based on the processing of the received voice signal; and transmitting the at least one of the transcript and the summary report to a computing device associated with an operator of the geographical map data, so that the geographical map data is updated by the operator.

[0025] In some embodiments, the method further comprises if it is determined to use the information about the geographical map data included in the detected voice signal, broadcasting the information about the geographical map data to at least a part of the plurality of computing devices that is geographically relevant to the information about the geographical map data.

[0026] According to various embodiments, a data processing apparatus configured to perform the method of any one of the above embodiments is provided.

[0027] According to various embodiments, 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 any one of the above embodiments is provided.

[0028] According to various embodiments, 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 any one of the above embodiments is provided. The computer-readable medium may include a non-transitory computer-readable medium.

BRIEF DESCRIPTION OF THE DRAWINGS

[0029] The invention will be better understood with reference to the detailed description when considered in conjunction with the non-limiting examples and the accompanying drawings, in which:

- FIGS. 1 and 2 illustrate infrastructures of a system including a server for facilitating communicating between a plurality of delivery service providers according to various embodiments.
- FIG. 3 illustrates a block diagram of a server for facilitating communicating between a plurality of delivery service providers according to various embodiments.
- FIG. 4 illustrates a flow diagram for a method for facilitating communicating between a plurality of delivery service providers according to various embodiments.
- FIG. 5 illustrates an exemplary infrastructure of a system for facilitating communicating between a plurality of delivery service providers according to various embodiments.
- FIGS. 6 to 9 illustrate exemplary diagrams showing a user interface according to various embodiments.

DETAILED DESCRIPTION

[0030] The following detailed description refers to the accompanying drawings that show, by way of illustration, specific details and embodiments in which the disclosure may be practiced. These embodiments are described in sufficient detail to enable those skilled in the art to practice the disclosure. Other embodiments may be utilized and structural, and logical changes may be made without departing from the scope of the disclosure. The various embodiments are not necessarily mutually exclusive, as some embodiments can be combined with one or more other embodiments to form new embodiments.

[0031] Embodiments described in the context of one of a server and a method are analogously valid for the other server and method. Similarly, embodiments described in the context of a server are analogously valid for a method, and vice-versa.

[0032] Features that are described in the context of an embodiment may correspondingly be applicable to the same or similar features in the other embodiments. Features that are described in the context of an embodiment may correspondingly be applicable to the other embodiments, even if not explicitly described in these other embodiments. Furthermore, additions and/or combinations and/or alternatives as described for a feature in the context of an embodiment may correspondingly be applicable to the same or similar feature in the other embodiments.

[0033] In the context of various embodiments, the articles “a”, “an” and “the” as used with regard to a feature or element include a reference to one or more of the features or elements.

[0034] As used herein, the term “and/or” includes any and all combinations of one or more of the associated listed items.

[0035] Throughout the description, the term “module” may be understood as an application specific integrated circuit (ASIC), an electronic circuit, a combinational logic circuit, a field

programmable gate array (FPGA), a processor which executes code, other suitable hardware components which provide the described functionality, or any combination thereof. The term of “module” may include a memory which stores code executed by the processor.

[0036] In the following, embodiments will be described in detail.

[0037] FIGS. 1 and 2 illustrate infrastructures of a system 200 including a server 100 for facilitating communicating between a plurality of delivery service providers 171 according to various embodiments.

[0038] As shown in FIG. 1, the system 200 may include, but is not limited to, the server 100, a database system 140, a network 150, a computing device 160 associated with a user 161 (also referred to as a “consumer”), and a plurality of computing devices 170 (not shown) each associated with the plurality of delivery service providers 171 (also referred to as “delivery partners” or “drivers”).

[0039] In some embodiments, an on-demand service may be a service allowing the user 161 to fulfil the user’s demand via an immediate access to items and/or services. The user 161 may request the on-demand service, such as a transport service or an item delivery service, using a user interface presented on the computing device 160. The user 161 may make an order for the on-demand service.

[0040] In some embodiments, the network 150 may include, but is not limited to, a Local Area Network (LAN), a Wide Area Network (WAN), a Global Area Network (GAN), or any combination thereof. The network 150 may provide a wireline communication, a wireless communication, or a combination of the wireline and wireless communication between the server 100 and the computing device 160, and between the server 100 and the plurality of computing devices 170. As shown in FIG. 2, the network 150 may provide the wireline communication, the wireless communication, or the combination of the wireline and wireless

communication between the plurality of computing devices 170, for example, a first computing device 170a, a second computing device 170b, and a third computing device 170c.

[0041] In some embodiments, the computing device 160 may be connectable to the server 100 via the network 150. In some embodiments, the computing device 160 may be arranged in data or signal communication with the server 100 via the network 150. In some embodiments, the computing device 160 may include, but is not limited to, at least one of the following: a mobile phone, a tablet computer, a laptop computer, a desktop computer, a head-mounted display and a smart watch. In some embodiments, the computing device 160 may be associated with the user 161. For example, the computing device 160 may belong to the user 161. Although not shown, it may be appreciated that the system 200 may further include a plurality of computing devices each associated with, for example, belonging to, a plurality of users.

[0042] In some embodiments, the computing device 160 may include a location sensor. In some embodiments, the location sensor may communicate with at least one of a global positioning satellite (GPS) server, a network server, and a Wi-Fi server, to detect a location of the computing device 160. In some embodiments, the computing device 160 may generate information about the location of the computing device 160.

[0043] In some embodiments, the server 100, for example, implemented by a server computer, may include a communication interface 110, a processor 120, and a memory 130 (as will be described with reference to FIG. 3).

[0044] In some embodiments, the server 100 may communicate with the computing device 160 via the network 150. In some embodiments, the computing device 160 may receive a request (hereinafter, referred to as an “order”) from the user 161 for the on-demand service. The computing device 160 may send the order to the server 100 via the network 150. In some embodiments, the computing device 160 may send the information about the location of the

computing device 160 to the server 100 via the network 150. The location of the computing device 160 may be considered as a location of the user 161.

[0045] In some embodiments, the system 200 may further include a database 141. In some embodiments, the database 141 may be a part of the database system 140 which may be external to the server 100. The server 100 may communicate with the database 141. In some other embodiments, although not shown, the database 141 may be implemented locally in the memory 130 of the server 100.

[0046] In some embodiments, the server 100 may communicate with the plurality of computing devices 170 via the network 150. In some embodiments, the plurality of computing devices 170 may be arranged in data or signal communication with the server 100 via the network 150. In some embodiments, the plurality of computing devices 170 may include, but is not limited to, at least one of the following: a mobile phone, a tablet computer, a laptop computer, a desktop computer, a head-mounted display and a smart watch. The plurality of computing devices 170 may be associated with the plurality of delivery service providers 171 respectively. For example, the plurality of computing devices 170 may belong to the plurality of delivery service providers 171 respectively. The plurality of delivery service providers 171 may include, but are not limited to, a delivery partner and a driver, who can provide a delivery service or a transport service from a first location, for example, a location of a selected item provider 181a or a location of a pick-up point of the user 161, to a second location, for example, a delivery location or a location of a destination of the user 161.

[0047] In some embodiments, the plurality of computing devices 170 may include a location sensor. In some embodiments, the location sensor may communicate with at least one of a global positioning satellite (GPS) server, a network server, and a Wi-Fi server, to detect a location of the plurality of computing devices 170 respectively. In some embodiments, the

plurality of computing devices 170 may generate information about the location of the plurality of computing devices 170 respectively.

[0048] In some embodiments, the server 100 may communicate with one or more external devices 180 (not shown), for example, one or more item provider devices 180, via the network 150. The one or more item provider devices 180 may be associated with one or more item providers 181 respectively. For example, the one or more item provider devices 180 may belong to the one or more item providers 181 respectively. The one or more item providers 181 may include, but are not limited to, a food provider and a goods provider, that can manufacture and/or provide items, for example, foods or goods. For example, the food provider may include, but is not limited to, a restaurant and a café. As an example, the goods provider may include, but is not limited to, a store, a market, and a supermarket. In some embodiments, the server 100 may receive the order for the item delivery service with the information about the location of the user 161, and then produce a list of items, associated with at least one item provider, which can be prepared and delivered to the user 161. In some embodiments, the server 100 may communicate with the one or more item provider devices 180 to check the one or more item providers' 181 availability. In some embodiments, the server 100 may communicate with the one or more item provider devices 180 to aggregate information including, but not limited to, a list of available items, an estimated time of preparation of each item, and an estimated price of each item, in order to produce the list of items. In some embodiments, the computing device 160 may display the list of items with the aggregated information of the at least one of the one or more item providers 181 on the user interface. In some embodiments, after the user 161 makes selections on the user interface for the order for the item delivery service, for example, by selecting the item provider 181a and the item, the server 100 may communicate with an item provider device 180a (not shown) of the selected item provider 181a to prepare the selected item.

[0049] FIG. 3 illustrates a block diagram of a server 100 for facilitating communicating between a plurality of delivery service providers 171 according to various embodiments.

[0050] As shown in FIG. 3, the server 100, for example, implemented by a server computer, may include a communication interface 110, a processor 120, and a memory 130.

[0051] In some embodiments, the memory 130 (also referred to as a “database”) may store input data and/or output data temporarily or permanently. In some embodiments, the memory 130 may be configured to store instructions. In some embodiments, the memory 130 may store program code which allows the server 100 to perform a method 300 (as will be described with reference to FIG. 4). In some embodiments, the program code may be embedded in a Software Development Kit (SDK). The memory 130 may include an internal memory of the server 100 and/or an external memory. The external memory may include, but is not limited to, an external storage medium, for example, a memory card, a flash drive, and a web storage.

[0052] In some embodiments, the communication interface 110 may allow one or more computing devices, including a computing device 160, to communicate with the processor 120 of the server 100 via a network 150, as shown in FIG. 1. In some embodiments, as shown in FIG. 1, the computing device 160 may belong to a user 161 who wants to make an order for an on-demand service. In some embodiments, the communication interface 110 may transmit signals to the computing device 160, and/or receive signals from the computing device 160 via the network 150.

[0053] In some embodiments, the communication interface 110 may allow the plurality of computing devices 170 to communicate with the processor 120 of the server 100 via the network 150, as shown in FIGS. 1 and 2. As shown in FIGS. 1 and 2, each of the plurality of computing devices 170 may belong to each of the plurality of delivery service providers 171 who may provide a delivery service or a transport service. In some embodiments, the

communication interface 110 may transmit signals to the plurality of computing devices 170, and/or receive signals from the plurality of computing devices 170, via the network 150.

[0054] In some embodiments, the communication interface 110 may receive an order for an on-demand service, for example, the delivery service or the transport service to be provided to the user 161, from the computing device 160 associated with the user 161 via the network 150. In some embodiments, the order for the delivery service, for example, an item delivery service, may include information about at least one selected item and at least one selected item provider providing the at least one selected item. The communication interface 110 may send the order for the delivery service or the transport service to the processor 120.

[0055] In some embodiments, the communication interface 110 may further receive information about a location of the computing device 160 from the computing device 160 via the network 150. The communication interface 110 may then send the information about the location of the computing device 160 to the processor 120.

[0056] In some embodiments, the communication interface 110 may receive concurrently the order for the delivery service or the transport service and the information about the location of the computing device 160 from the computing device 160 via the network 150. In some other embodiments, the communication interface 110 may receive the order for the delivery service or the transport service first, and subsequently receive the information about the location of the computing device 160, from the computing device 160 via the network 150.

[0057] The processor 120 may include, but is not limited to, a microprocessor, an analogue circuit, a digital circuit, a mixed-signal circuit, a logic circuit, an integrated circuit, a Central Processing Unit (CPU), a Graphics Processing Unit (GPU), a Digital Signal Processor (DSP), a Field Programmable Gate Array (FPGA), an Application Specific Integrated Circuit (ASIC), or any combination thereof. Any other kind of implementation of the respective functions, which will be described below in further detail, may also be understood as the processor 120.

[0058] In some embodiments, the processor 120 may be connectable to the communication interface 110. In some embodiments, the processor 120 may be arranged in data or signal communication with the communication interface 110 to receive the order for the delivery service or the transport service and the information about the location of the computing device 160.

[0059] In some embodiments, the processor 120 may receive concurrently the order for the delivery service or the transport service and the information about the location of the computing device 160 from the communication interface 110. In some other embodiments, the processor 120 may receive the order for the delivery service or the transport service first, and subsequently receive the information about the location of the computing device 160 from the communication interface 110.

[0060] In some embodiments, where the order is a request for the delivery service, for example, the item delivery service, the processor 120 may receive a request for a search for the item delivery service from the computing device 160. In some embodiments, the processor 120 may produce a list of items, associated with at least one item provider, which can be prepared and delivered to the user 161. The processor 120 may then provide the list of items to the computing device 160, so that the user 161 may select an item provider 181a and the item for the item delivery service. In some embodiments, the user 161 may select the item provider 181a and the item from the list of items. The computing device 160 may generate information about the selected item provider 181a and the selected item, based on the user's 161 input. The processor 120 may receive the information about the selected item provider 181a and the selected item from the computing device 160, via the communication interface 110. In some embodiments, the processor 120 may then provide the information about the selected item to the selected item provider 181a for preparing the selected item, via the communication interface 110. In some embodiments, the processor 120 may select a delivery service provider, for example, a first

delivery service provider 171a, from the plurality of delivery service providers 171 based on a geographical location of each of the plurality of delivery service providers 171. In some embodiments, the processor 120 may request a first computing device 170a associated with the first delivery service provider 171a to pick up the selected item at a geographical location of the selected item provider 181a and deliver the selected item to the user 161.

[0061] In some embodiments, where the order is a request for the transport service, the processor 120 may receive a request for a search for the transport service from the computing device 160. In some embodiments, the processor 120 may produce a list of available transport options, which can be provided to the user 161. The processor 120 may then provide the list of available transport options to the computing device 160, so that the user 161 may select a desired transport option. In some embodiments, the user 161 may select a delivery service provider, for example, the first delivery service provider 171a, from the list of available transport options. The computing device 160 may generate information about the first delivery service provider 171a, based on the user's 161 input. The processor 120 may receive the information about the first delivery service provider 171a from the computing device 160, via the communication interface 110. In some embodiments, the processor 120 may request the first computing device 170a to pick up the user 161 at a geographical location of a pick-up point and transport the user 161 to a geographical location of a destination.

[0062] In some embodiments, the system 200 may include walkie-talkie channels for a communication between the plurality of delivery service devices 170. In some embodiments, the walkie-talkie channels may be connected to the communication interface 110 of the server 100.

[0063] In some embodiments, the communication interface 110 may be arranged in data communication with the plurality of computing devices 170 each associated with the plurality of delivery service providers 171. In some embodiments, the communication interface 110 may

be configured to connect the plurality of computing devices 170 to communicate with one another. For example, the communication interface 110 may provide a platform so that the plurality of computing devices 170 communicate with one another. As an example, the plurality of computing devices 170 may transmit and/or receive voice signal one another, via the communication interface 110.

[0064] In some embodiments, the processor 120 may obtain geographical information about orders assigned to each of the plurality of computing devices 170. For example, the orders may include, but are not limited to, a request for a delivery service and a request for a transport service. For example, the geographical information about orders assigned to each of the plurality of computing devices 170 may include, but is not limited to, at least one of a current location, a location of a pick-up point, a location of a destination, and a travel route relating to the orders assigned to each of the plurality of computing devices 170.

[0065] In some embodiments, the processor 120 may use the geographical information about on-demand orders and scheduled orders, to decide which computing devices 170 are geographically relevant (for example, on the same route), to broadcast a message (for example, a voice message) to the computing devices 170 which are geographically relevant.

[0066] In some embodiments, the processor 120 may obtain the geographical information about orders from the plurality of computing devices 170 each associated with the plurality of delivery service providers 171 that are currently providing the assigned on-demand service. In some other embodiments, the processor 120 may obtain the geographical information about orders from the plurality of computing devices 170 each associated with the plurality of delivery service providers 171 that have been provided the assigned on-demand service in a last predetermined time (for example, in a first predetermined time), that are currently providing the assigned on-demand service, and/or that are planned to provide the assigned on-demand service in a next predetermined time (for example, in a second predetermined time).

For example, the first predetermined time and the second predetermined time may be the same. As another example, the first predetermined time and the second predetermined time may be different from each other, and each of the first predetermined time and the second predetermined time may be determined based on at least one criterion, for example, traffic conditions.

[0067] In some embodiments, the plurality of computing devices 170 includes the first computing device 170a associated with the first delivery service provider 171a. An order may be assigned to the first computing device 170a. In some embodiments, the processor 120 may determine one or more computing devices that are geographically relevant to the first computing device 170a from the plurality of computing devices 170, based on the geographical information about the orders assigned to each of the plurality of computing devices 170.

[0068] In some embodiments, the processor 120 may compare the geographical information about the order assigned to the first computing device 170a with the geographical information about the orders assigned to each of the remaining computing devices of the plurality of computing devices 170. In some embodiments, the processor 120 may determine the one or more computing devices that are geographically relevant to the first computing device 170a based on the comparison results. In some embodiments, the processor 120 may determine that a computing device is geographically relevant to the first computing device 170a, if at least one geographical information about the order assigned to the first computing device 170a relates to at least one geographical information about an order assigned to the computing device. For example, the processor 120 may determine if at least one of a location of a pick-up point of the order, a location of a destination of the order, and a current location of the first computing device 170a is adjacent to at least one of a location of a pick-up point of the order, a location of a destination of the order, and a current location of each of the remaining computing devices of the plurality of computing devices 170. As another example, the

processor 120 may determine if a travel route assigned to the first computing device 170a is the same as a travel route assigned to each of the remaining computing devices of the plurality of computing devices 170.

[0069] In some embodiments, the processor 120 may connect the first computing device 170a with each of the one or more computing devices each associated with one or more delivery service providers, so that the first computing device 170a communicates with each of the one or more computing devices, while the first computing device 170a moves along a travel route relating to an order assigned to the first computing device 170a. In some embodiments, the first computing device 170a may communicate with each of the one or more computing devices via the communication interface 110.

[0070] In some embodiments, the communication interface 110 may receive voice signal communicated between the first computing device 170a and the one or more computing devices. For example, the first computing device 170a may receive voice signal from the first delivery service provider 171a, and transmit the voice signal to the one or more computing devices, for example, a second computing device 170b, via the communication interface 110. For example, the one or more computing devices, for example, the second computing device 170b, may receive the voice signal transmitted from the first computing device 170a, via the communication interface 110. As an example, the first computing device 170a may receive voice signal from the one or more computing devices, for example, the second computing device 170b, via the communication interface 110.

[0071] In some embodiments, the processor 120 may determine one or more another computing devices that are relevant, but non-geographically relevant, to the first computing device 170a based on information about the one or more another computing devices. For example, the information about the one or more another computing devices may include, but is not limited to, personal information and relationship information of each delivery service

provider. As an example, the processor 120 may connect the first computing device 170a with each of one or more another computing devices each associated with one or more another delivery service providers who belong to a friend group and/or a driver's community to which the first delivery service provider 171a belongs. The processor 120 may connect the first computing device 170a with each of the one or more another computing devices each associated with one or more another delivery service providers, so that the first computing device 170a communicates with each of the one or more another computing devices, while the first computing device 170a moves along a travel route relating to an order assigned to the first computing device 170a. In some embodiments, the first computing device 170a may communicate with each of the one or more another computing devices via the communication interface 110. In some embodiments, the processor 120 may connect the first computing device 170 with each of the one or more computing devices which are geographically relevant and each of the one or more another computing devices which are relevant, but non-geographically relevant.

[0072] In some embodiments, the memory 130 may store geographical map data which is accessible by the plurality of computing devices 170 via the communication interface 110. In some embodiments, the plurality of computing devices 170 may access the geographical map data via the communication interface 110. For example, after the order is assigned to the first computing device 170a, the processor 120 may determine a travel route relating to the order assigned to the first computing device 170a, and provide the determined travel route to the first computing device 170a. For example, the determined travel route may be indicated on the geographical map data and provided to the first computing device 170a. For example, the first computing device 170a may obtain the determined travel route indicated on the geographical map data by accessing the memory 130 via the communication interface 110.

[0073] In some embodiments, the processor 120 may detect the received voice signal. For example, the processor 120 may detect the voice signal received from the first computing device 170a using a natural speech recognition technology. It may be appreciated that the processor 120 may use a conventional natural speech recognition technology to detect the voice signal.

[0074] The various embodiments may boost internal development of automatic speech recognition (ASR) technology suitable for in-vehicle and/or in-traffic environments. High-quality ASR may require training on abundant speech data that matches production use (for example, natural local conversations inside noisy vehicular and/or traffic environments). Such data collection may be often expensive, time-consuming and/or unnatural (for example, asking volunteers to read out predetermined texts). Advantageously, the various embodiments may provide a channel for collecting natural local conversational speech data in vehicular and/or traffic environments at scale.

[0075] In some embodiments, the processor 120 may determine if the detected voice signal includes information about the geographical map data. As an example, the processor 120 may determine if the detected voice signal received from the first computing device 170a includes information about the geographical map data, for example, a traffic condition or a map error. In some embodiments, if it is determined that the detected voice signal includes the information about the geographical map data, the processor 120 may determine whether to use the information about the geographical map data included in the detected voice signal. For example, the processor 120 may determine to update the geographical map data based on the information about the geographical map data included in the detected voice signal. Additionally or alternatively, the processor 120 may broadcast the information about the geographical map data to at least a part of the plurality of computing devices 170 that is geographically relevant to the information about the geographical map data.

[0076] Throughout the description, “map updates” may include at least one of updating to a base map (for example, corrections to roads or places of interest), and updating to real-time conditions that may affect map services (for example, traffic conditions that may affect travel time estimation).

[0077] In some embodiments, if it is determined that the detected voice signal includes the information about the geographical map data, the processor 120 may transmit a message about a request for verification to at least one computing device of the plurality of computing devices 170. In some embodiments, the processor 120 may determine the at least one computing device from the plurality of computing devices 170, based on a current location of each of the plurality of computing devices. For example, if the information about the geographical map data included in the voice signal received from the first computing device 170a relates to a map error for a specific location, the processor 120 may determine the at least one computing device that has passed the specific location in the last predetermined time (for example, in a third predetermined time), that is currently passing the specific location, and/or that plans to pass the specific location in a next predetermined time (for example, in a fourth predetermined time). For example, the third predetermined time and the fourth predetermined time may be the same. As another example, the third predetermined time (for example, in the last 5 minutes) and the fourth predetermined time (for example, in the next 2 minutes) may be different from each other, and each of the third predetermined time and the fourth predetermined time may be determined based on at least one criterion, for example, traffic conditions. For example, the processor 120 may select a seventh computing device 170g, from the plurality of computing devices 170, that has passed the specific location in the last 5 minutes as the at least one computing device, and transmits the message about the request for verification to the seventh computing device 170g. Although not shown, it may be appreciated that the processor 120 may transmit the messages about the request for verification to multiple computing devices.

[0078] In some embodiments, the processor 120 may determine whether to use the information about the geographical map data included in the detected voice signal, based on a response message to the message about the request for verification. For example, if the processor 120 may receive the response message to the message about the request for verification from the seventh computing device 170g, the processor 120 may check the response message to see if the response message includes a confirmation of the map error for the specific location. If the response message includes the confirmation of the map error for the specific location, the processor 120 may determine to use the information about the geographical map data included in the detected voice signal received from the first computing device 170a. Although not shown, it may be appreciated that the processor 120 may determine to use the information about the geographical map data, if the processor 120 receives at least a certain number of confirmation messages.

[0079] In some embodiments, if the response message includes a disagreement of the map error for the specific location, the processor 120 may transmit additional message about the request for verification to at least one additional computing device. In some embodiments, the processor 120 may adjust at least one of the third predetermined time and the fourth predetermined time, and select the at least one additional computing device. For example, the processor 120 may increase the fourth predetermined time (for example, to the next 4 minutes) and transmit the additional message about the request for verification to the at least one additional computing device. In some other embodiments, if the response message includes a disagreement of the map error for the specific location, the processor 120 may determine not to use the information about the geographical map data included in the detected voice signal received from the first computing device 170a.

[0080] In some embodiments, if it is determined to use the information about the geographical map data included in the detected voice signal, the processor 120 may update the geographical

map data based on the information about the geographical map data included in the detected voice signal. In some embodiments, the geographical map data may be updated by an operator of the geographical map data (also referred to as a “map operator” or a “local map operator”). For example, the operator may include a human map operator, and the geographical map data may be manually updated by the human map operator. As another example, the operator may include a processor 120 and/or another computing device, and the geographical map data may be automatically updated by the processor 120 and/or the another computing device. As another example, the geographical map data may be updated by the human map operator and the processor 120 (and/or the another computing device). In some embodiments, the processor 120 may process the received voice signal, for example, using the natural speech recognition technology. It may be appreciated that the processor 120 may use the conventional natural speech recognition technology to process the received voice signal. In some embodiments, the processor 120 may create at least one of a transcript and a summary report based on the processing of the received voice signal. For example, the transcript may be a transcript of the received voice signal. As an example, the summary report may be a summarised voice signal in a written form. In some embodiments, the processor 120 may transmit the at least one of the transcript and the summary report to a computing device associated with the map operator, so that the geographical map data is updated by the map operator, for example, the human map operator.

[0081] In some embodiments, the processor 120 may store the updated geographical map data in the memory 130, so that the plurality of computing devices 170 may access the updated geographical map data via the communication interface 110. In some embodiments, the processor 120 may provide the updated geographical map data to the plurality of computing devices 170. For example, the processor 120 may provide a warning signal relating to a traffic condition or an updated map corrected from the map error reported by the voice signal from

the first computing device 170 to the plurality of computing devices 170. In some embodiments, the processor 120 may adjust the travel route of a computing device, for example, a fourth computing device 170d, based on the updated geographical map data.

[0082] As described above, the one or more delivery service providers may naturally acknowledge or verify the message (also referred to as a “report of the accident”) immediately. The various embodiments may provide instant validation to the processor 120, including a central mapmaking system, to take actions. Conventionally, the central mapmaking system may need to wait for multiple similar reports and verifications before considering the report valid. However, advantageously, the various embodiments may reduce time to update the map according to the report.

[0083] In some embodiments, if it is determined to use the information about the geographical map data included in the detected voice signal, the processor 120 may broadcast the information about the geographical map data to at least a part of the plurality of computing devices 170 that is geographically relevant to the information about the geographical map data (hereinafter, referred to as “relevant computing devices”). For example, the processor 120 may broadcast the traffic condition or the map error reported by the voice signal from the first computing device 170a to the relevant computing devices. For example, the relevant computing devices may be selected based on geographical information relating to the orders each assigned to the plurality of computing devices 170 with respect to the specific location where the traffic condition or the map error is reported. For example, with reference to FIG. 5, if the first computing device 170a reports the map error at its current location, the processor 120 may select the fourth computing device 170d and a fifth computing device 170e moving along a travel route same as that of the first computing device 170a, behind the first computing device 170a. In this manner, the relevant computing devices may receive information about the traffic condition or the map error which may affect the delivery service or the transport service.

[0084] It may be appreciated that the plurality of delivery service devices 170 may prefer to talk about real-time incidents personally with other delivery service providers, rather than with an operator of the geographical map data (or an operator of a driver application (app)). The various embodiments may immediately widen the funnel of real-time map update reports into a backend system, for example, the server 100. Hence, the server 100 may keep map services more up-to-date with higher reliability. Advantageously, connecting the walkie-talkie channels for the communication between the plurality of delivery service devices 170 to the communication interface 110 of the server 100 may provide the ability to recognise which delivery service provider submitted a first report of the accident and/or aided other delivery service providers, and reward them accordingly.

[0085] The voice signal communicated between the one or more delivery service providers may immediately provide benefits even before the server 100 performs an action, since delivery service providers received the voice signal may perform an action in response to the reports immediately (for example, modifying their travel routes or getting to their destination more quickly). The various embodiments may reduce a time-delay from the report, for example, the report of the accidents, to the benefits. The various embodiments may provide immediate gratification to the delivery service provider that reported the accident, and thus motivate the driver community to become more active reporters of the accident.

[0086] According to various embodiments, a delivery service provider (also referred to as a “requestor”) may remotely ask for directions from other delivery service providers (especially those who are in their vicinity, or at the destination of interest). This may be better than asking for directions from strangers as delivery service providers may either be generally more experienced or be already at the location which the requestor is interested in.

[0087] Advantageously, according to various embodiments, the first delivery service provider 171a may talk to other nearby delivery service providers and/or delivery service providers

along the same travel route, and listen to their communications. In addition, the backend system, for example, the server 100, may simultaneously listen to communications between the plurality of delivery service providers 171 for actionable insights to automatically perform map service actions such as:

- flagging ongoing traffic events reported by the delivery service providers, such as accidents, and warning other nearby delivery service providers;
- flagging difficult-to-reach POIs (Points of Interest) for map and/or navigation route correction, if the delivery service providers frequently ask for directions to a certain destination; and/or
- flagging map errors that the delivery service providers frequently report to other delivery service providers (for example, there is no through-road at this junction), and automatically updating the map accordingly.

[0088] The various embodiments may be available for any mobility/transport or deliveries-driver and enable better mapmaking. It may be appreciated that the various embodiments may be applied to any industry that may gain actionable insights from natural on-the-job walkie-talkie conversations between distant workers. Industries that are developing the speech recognition technology for live environments may benefit from the abundance of natural speech data obtained via walkie-talkie channels. Such applicable industries may include, but are not limited to, logistics fleets, factory workers, and military/security.

[0089] FIG. 4 illustrates a flow diagram for a method 300 for facilitating communicating between a plurality of delivery service providers according to various embodiments. According to various embodiments, the method 300 for facilitating communicating between the plurality of delivery service providers may be provided.

[0090] In some embodiments, the method 300 may include a step 301 of obtaining geographical information about orders assigned to each of a plurality of computing devices

each associated with the plurality of delivery service providers. The plurality of computing devices may include a first computing device associated with a first delivery service provider.

[0091] In some embodiments, the method 300 may include a step 302 of determining one or more computing devices that are geographically relevant to the first computing device from the plurality of computing devices, based on the geographical information about the orders assigned to each of the plurality of computing devices.

[0092] In some embodiments, the method 300 may include a step 303 of connecting the first computing device with each of the one or more computing devices so that the first computing device communicates with each of the one or more computing devices while the first computing device moves along a travel route relating to an order assigned to the first computing device.

[0093] FIG. 5 illustrates an exemplary infrastructure of a system 200 for facilitating communicating between a plurality of delivery service providers 171 according to various embodiments. In some embodiments, the server 100 described with reference to FIG. 3 may perform operations relating to FIG. 5. In some embodiments, the processor 120 described with reference to FIG. 3 includes at least one of a broadcast system 121, a speech processing / recognition module 122, and a map service module 123.

[0094] It may be appreciated that each of the plurality of computing devices 170 (170a, 170b, 170c, 170d, 170e, 170f, 170g, 170h, 170i and 170j) is associated with the plurality of delivery service providers 171 (171a, 171b, 171c, 171d, 171e, 171f, 171g, 171h, 171i and 171j).

[0095] In some embodiments, the processor 120 may determine one or more computing devices that are geographically relevant to a first computing device 170a from a plurality of computing devices 170, based on geographical information about orders assigned to each of the plurality of computing devices 170. In some embodiments, the processor 120 may compare geographical information about an order assigned to the first computing device 170a with

geographical information about orders assigned to each of the remaining computing devices of the plurality of computing devices 170. In some embodiments, the processor 120 may determine the one or more computing devices that are geographically relevant to the first computing device 170a based on the comparison results.

[0096] As shown in FIG. 5, the processor 120 may determine that a second computing device 170b is geographically relevant to the first computing device 170a, based on the comparison results that a location of a pick-up point (P) of the order assigned to the first computing device 170a is adjacent to a location of a pick-up point of an order assigned to the second computing device 170b. The processor 120 may determine that a fourth computing device 170d, a fifth computing device 170e and a ninth computing device 170i are geographically relevant to the first computing device 170a, based on the comparison results that a travel route (TR) relating to the order assigned to the first computing device 170a is the same as a travel route relating to orders assigned to the fourth computing device 170d, the fifth computing device 170e and the ninth computing device 170i. The processor 120 may determine that a seventh computing device 170g is geographically relevant to the first computing device 170a, based on the comparison results that a current location of the first computing device 170a is adjacent to a current location of the seventh computing device 170g. The processor 120 may determine that a tenth computing device 170j is geographically relevant to the first computing device 170a, based on the comparison results that a location of a destination (D) of the order assigned to the first computing device 170a is adjacent to a location of a destination of an order assigned to the tenth computing device 170j.

[0097] In some embodiments, the adjacency of the location may be determined based on a predetermined radius or distance from the location. For example, computing devices, for example, the second computing device 170b, located within a predetermined radius (A) centred at the location of the pick-up point (P) of the first computing device 170a may be determined

as being geographically relevant to the first computing device 170a. For example, computing devices, for example, the seventh computing device 170g, located within a predetermined radius (B) centred at the current location of the first computing device 170a may be determined as being geographically relevant to the first computing device 170a. For example, computing devices, for example, the tenth computing device 170j, located within a predetermined radius (C) centred at the location of the destination (D) of the first computing device 170a may be determined as being geographically relevant to the first computing device 170a.

[0098] In some embodiments, the processor 120 may determine that the current location of the seventh computing device 170g is adjacent to the current location of the first computing device 170a, based on the findings that the current location of the seventh computing device 170g is within the predetermine radius (B) from the current location of the first computing device 170a. In some embodiments, an area covered by the predetermined radius (B) may be changed as the first computing device 170a moves. For example, while the first computing device 170a moves along the travel route (TR), the one or more computing devices geographically relevant to the computing device may be changed as the current location of the first computing device 170a may be changed and locations of other computing devices may also be changed.

[0099] As shown in FIG. 5, the processor 120 may determine that a third computing device 170c, a sixth computing device 170f and an eighth computing device 170h are not geographically relevant to the first computing device 170a, based on the comparison results that the current location, the location of the pick-up point (P), the location of the destination (D), and the travel route (TR) relating to the order assigned to the first computing device 170a do not relate to those of the third computing device 170c, the sixth computing device 170f and the eighth computing device 170h.

[00100] As shown in FIG. 5, the broadcast system 121 may allocate which delivery service provider may transmit messages to and receive messages from. For example, the first delivery

service provider 171a may transmit the messages to and receive the messages from the one or more delivery service providers that are:

- within a certain proximity / radius from them;
- along their travel route if they are on a job;
- within a certain proximity of their pick-up point if they are on a job; and/or
- within a certain proximity of their destination if they are on a job.

In this manner, the various embodiments may limit the messages to be shared between only delivery service providers geographically relevant to each other.

[00101] As shown in FIG. 5, the processor 120 may connect the first computing device 170a with the one or more computing devices geographically relevant to the first computing device 170a, for example, the second computing device 170b, the fourth computing device 170d, the fifth computing device 170e, the seventh computing device 170g, the ninth computing device 170i and the tenth computing device 170j, so that the first computing device 170a may communicate with each of the one or more computing devices while the first computing device 170a moves along the travel route (hereinafter, the first computing device 170a and the one or more computing devices may be referred to as a “group” or “grouped computing devices”). In some embodiments, the grouped computing devices may communicate one another. In some embodiments, a message, for example, voice signal, communicated between the grouped computing devices may be transmitted to the broadcast system 121. In some embodiments, the broadcast system 121 may receive the message communicated between the grouped computing devices and send a message to the grouped computing devices.

[00102] In some embodiments, each of the plurality of computing devices 170 may be in multiple channels. For example, each of the plurality of computing devices 170 may belong to a plurality of groups.

[00103] In some embodiments, the broadcast system 121 may send raw speech audio data for the voice signal to the speech processing / recognition module 122. In some embodiments, the speech processing / recognition module 122 may process the voice signal, for example, using a natural speech recognition technology.

[00104] In some embodiments, the speech processing / recognition module 122 may parse the voice signal into a “map action request” (for example, “Through-road ABC needs to be marked as closed”) that may be sent to map service module 123. The map service module 123 may receive (take) the request, and automatically update the map appropriately, according to the request. In some embodiments, the map service module 123 may store the updated map and provide the updated map to the plurality of computing devices 170.

[00105] In some other embodiments, the speech processing / recognition module 122 may create a transcript for the voice signal and/or an automated summary report for the voice signal. In some embodiments, an operator, for example, a human map operator 124 may manually update the map, and send the updated map to the map service module 123. The map service module 123 may store the updated map and provide the updated map to the plurality of computing devices 170.

[00106] In some embodiments, the broadcast system 121 may provide the raw speech audio data for the voice signal to the human map operator 124 directly. In some embodiments, the broadcast system 121 may communicate with the human map operator 124.

[00107] In some embodiments, the human map operator 124 may be active on the walkie-talkie channels as well. In this manner, the various embodiments may provide the plurality of delivery service providers 171 and the human map operator 124 with an instant access to each other to cooperate with updating the map.

[00108] In some embodiments, the broadcast system 121 may make use of the speech processing/recognition module 122 that processes the raw speech audio data in order to:

- create the automated transcript or the summary report to the human map operator 124 to take actions;
- automatically update map services; and/or
- automatically broadcast alerts and/or requests for incident verification, etc.

[00109] FIGS. 6 to 9 illustrate exemplary diagrams showing a user interface according to various embodiments.

[00110] In some embodiments, the processor 120 described with reference to FIG. 3 may provide the user interface (also referred to as a “driver application (app) user interface”) to a plurality of computing devices 170 each associated with a plurality of delivery service providers 171. For example, as shown in FIGS. 6 to 9, the user interface may provide a side icon where a delivery service provider may touch and drag (or push) to transmit a message. As an example, the side icon may visually cue for other actions.

[00111] As shown in FIG. 6, a first computing device 170a described with reference to FIG. 5 may display a user interface with a navigation view. The first computing device 170a associated with a first delivery service provider 171a may display the side icon 172 for transmitting the message, for example, voice signal. As an example, the first delivery service provider 171a may touch the side icon 172 and drag the side icon 172 to a predetermined direction, for example, to a right direction, to input the voice signal and transmit the voice signal.

[00112] As shown in FIG. 6, one or more computing devices determined as being geographically relevant to the first computing device 170a, for example, a second computing device 170b, may display a user interface with a navigation view. After the voice signal is transmitted from the first computing device 170a to the communication interface 110 described with reference to FIG. 3, the communication interface 110 may transmit the voice signal received from the first computing device 170a to the one or more computing devices, for example, the second computing device 170b. As an example, the side icon 173 displayed in the

user interface presented on the second computing device 170b may visually cue when the first delivery service provider's 171a voice signal is received and played in the second computing device 170b. For example, the side icon 173 may show a name or a nickname of the first delivery service provider 171a when the first delivery service provider's 171a voice signal is received and played.

[00113] As shown in FIG. 7, each of the one or more computing devices, for example, the second computing device 170b, a fourth computing device 170d and a seventh computing device 170g, determined as being geographically relevant to the first computing device 170a may receive and play the first delivery service provider's 171a voice signal. In some embodiments, side icons 174, 175, 176 may show a name or a nickname of the first delivery service provider 171a when the first delivery service provider's 171a voice signal is received and played. In some embodiments, the side icons 174, 175, 176 may further show information about a relationship between the first computing device 170a, and each of the second computing device 170b, the fourth computing device 170d and the seventh computing device 170g. For example, a location of a pick-up point of an order assigned to the second computing device 170b may be the same as a location of a pick-up point of the order assigned to the first computing device 170a. The side icon 174 displayed in the user interface presented on the second computing device 170b may show "same pick-up point". For example, a travel route relating to an order assigned to the fourth computing device 170d may be the same as the travel route relating to the order assigned to the first computing device 170a. The side icon 175 displayed in the user interface presented on the fourth computing device 170d may show "same travel route". For example, a current location of the seventh computing device 170g may be adjacent to a current location of the first computing device 170a. The side icon 176 displayed in the user interface presented on the seventh computing device 170g may show "nearby driver". Advantageously, each of the one or more delivery service providers may easily assess

if he/she should pay attention to the voice signal received from the first computing device 170a, based on the information about the relationship.

[00114] As shown in FIG. 7, a computing device, for example, a third computing device 170c, determined as being geographically irrelevant to the first computing device 170a may not receive the first delivery service provider's 171a voice signal. The user interface of the third computing device 170c may not display a side icon relating to the first delivery service provider's 171a voice signal.

[00115] As shown in FIG. 8, in some embodiments, where the processor 120 has detected a predetermined number of voice signals about an accident occurred in a specific location from a predetermined number of computing devices, the processor 120 may broadcast a request for verification to at least one computing device of the plurality of computing devices 170. For example, the processor 120 may determine the predetermined number based on the number of delivery service providers adjacent to the specific location. If there is consensus from the at least one computing device, the processor 120 may update the map considering the accident. For example, the processor 120 may check the number or a ratio of confirmation messages, and determine whether to treat the voice signals about the accident as being valid.

[00116] For example, as shown in FIG. 8, the processor 120 may transmit a message about the request for verification to the at least one computing device, for example, a sixth computing device 170f that has passed the specific location in the last predetermined time (for example, in a third predetermined time). The user interface presented on the sixth computing device 170f may display a side button 177 to verify the accident occurred in the specific location.

[00117] As shown in FIG. 9, the processor 120 may update the map. In some embodiments, the processor 120 may provide the updated map to the plurality of computing devices 170. For example, the processor 120 may provide the updated map to a fifth computing device 170e moving along a travel route same as that of the first computing device 170a, behind the first

computing device 170a. The user interface presented on the fifth computing device 170e may show the updated map 178a. Additionally or alternatively, the processor 120 may provide a warning signal relating to the accident to the fifth computing device 170e. The user interface presented on the fifth computing device 170e may show the warning signal 178b.

[00118] In some embodiments, as shown in FIG. 9, the processor 120 may adjust the travel route of a computing device, for example, the fourth computing device 170d, based on the updated map. The user interface presented on the fourth computing device 170d may display a message 179 informing that the travel route is changed due to the accident.

[00119] While the disclosure has been particularly shown and described with reference to specific embodiments, it should be understood by those skilled in the art that various changes in form and detail may be made therein without departing from the spirit and scope of the invention as defined by the appended claims. The scope of the invention is thus indicated by the appended claims and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced.

CLAIMS

1. A server for facilitating communicating between a plurality of delivery service providers, the server comprising:

a memory configured to store instructions;

a communication interface arranged in data communication with a plurality of computing devices each associated with the plurality of delivery service providers and configured to connect the plurality of computing devices to communicate with one another; and

a processor for executing the stored instructions and configured to:

obtain geographical information about orders assigned to each of the plurality of computing devices including a first computing device;

determine one or more computing devices that are geographically relevant to the first computing device from the plurality of computing devices, based on the geographical information about the orders assigned to each of the plurality of computing devices; and

connect the first computing device with each of the one or more computing devices so that the first computing device communicates with each of the one or more computing devices while the first computing device moves along a travel route relating to an order assigned to the first computing device.

2. The server according to claim 1, wherein the geographical information about orders assigned to each of the plurality of computing devices includes at least one of a current location, a location of a pick-up point, a location of a destination, and a travel route relating to the orders assigned to each of the plurality of computing devices.

3. The server according to claim 1 or claim 2, wherein the communication interface is further configured to receive voice signal communicated between the first computing device and the one or more computing devices.

4. The server according to claim 3, wherein the memory is further configured to store geographical map data which is accessible by the plurality of computing devices via the communication interface.

5. The server according to claim 4, wherein the processor is further configured to:
detect the received voice signal;
determine if the detected voice signal includes information about the geographical map data; and
if it is determined that the detected voice signal includes the information about the geographical map data, determine whether to use the information about the geographical map data included in the detected voice signal.

6. The server according to claim 5, wherein the processor is further configured to:
if it is determined that the detected voice signal includes the information about the geographical map data, transmit a message about a request for verification to at least one computing device of the plurality of computing devices; and
determine whether to use the information about the geographical map data included in the detected voice signal, based on a response message to the message about the request for verification.

7. The server according to claim 6, wherein the processor is further configured to determine the at least one computing device from the plurality of computing devices, based on a current location of each of the plurality of computing devices.

8. The server according to any one of claims 5 to 7, wherein the processor is further configured to:

if it is determined to use the information about the geographical map data included in the detected voice signal, update the geographical map data based on the information about the geographical map data included in the detected voice signal; and

store the updated geographical map data in the memory, so that the plurality of computing devices access the updated geographical map data via the communication interface.

9. The server according to claim 8, wherein the processor is further configured to:

process the received voice signal;

create at least one of a transcript and a summary report based on the processing of the received voice signal; and

transmit the at least one of the transcript and the summary report to a computing device associated with an operator of the geographical map data, so that the geographical map data is updated by the operator.

10. The server according to any one of claims 5 to 9, wherein the processor is further configured to:

if it is determined to use the information about the geographical map data included in the detected voice signal, broadcast the information about the geographical map data to at least

a part of the plurality of computing devices that is geographically relevant to the information about the geographical map data.

11. A method for facilitating communicating between a plurality of delivery service providers, the method comprising:

obtaining geographical information about orders assigned to each of a plurality of computing devices each associated with the plurality of delivery service providers, wherein the plurality of computing devices include a first computing device;

determining one or more computing devices that are geographically relevant to the first computing device from the plurality of computing devices, based on the geographical information about the orders assigned to each of the plurality of computing devices; and

connecting the first computing device with each of the one or more computing devices so that the first computing device communicates with each of the one or more computing devices while the first computing device moves along a travel route relating to an order assigned to the first computing device.

12. The method according to claim 11, wherein the geographical information about orders assigned to each of the plurality of computing devices includes at least one of a current location, a location of a pick-up point, a location of a destination, and a travel route relating to the orders assigned to each of the plurality of computing devices.

13. The method according to claim 11 or claim 12 further comprising receiving voice signal communicated between the first computing device and the one or more computing devices.

14. The method according to claim 13 further comprising storing, in a memory, geographical map data which is accessible by the plurality of computing devices via a communication interface.

15. The method according to claim 14 further comprising:

detecting the received voice signal;

determining if the detected voice signal includes information about the geographical map data; and

if it is determined that the detected voice signal includes the information about the geographical map data, determining whether to use the information about the geographical map data included in the detected voice signal.

16. The method according to claim 15 further comprising:

if it is determined that the detected voice signal includes the information about the geographical map data, transmitting a message about a request for verification to at least one computing device of the plurality of computing devices; and

determining whether to use the information about the geographical map data included in the detected voice signal, based on a response message to the message about the request for verification.

17. The method according to claim 16 further comprising determining the at least one computing device from the plurality of computing devices, based on a current location of each of the plurality of computing devices.

18. The method according to any one of claims 15 to 17 further comprising:

if it is determined to use the information about the geographical map data included in the detected voice signal, updating the geographical map data based on the information about the geographical map data included in the detected voice signal; and

storing the updated geographical map data in the memory, so that the plurality of computing devices access the updated geographical map data via the communication interface.

19. The method according to claim 18 further comprising:

processing the received voice signal;

creating at least one of a transcript and a summary report based on the processing of the received voice signal; and

transmitting the at least one of the transcript and the summary report to a computing device associated with an operator of the geographical map data, so that the geographical map data is updated by the operator.

20. The method according to any one of claims 15 to 19 further comprising, if it is determined to use the information about the geographical map data included in the detected voice signal, broadcasting the information about the geographical map data to at least a part of the plurality of computing devices that is geographically relevant to the information about the geographical map data.