

**SERVER AND METHOD FOR PROVIDING INFORMATION FOR ON-DEMAND
SERVICE****TECHNICAL FIELD**

[0001] Various embodiments relate to a server and a method for providing information for an on-demand service.

BACKGROUND

[0002] Due to development of information technology, a user (also referred to as a “requester”) may request an on-demand service using a computing device. The on-demand service may allow the user to fulfil the user’s demand via an immediate access to goods and/or services. The user may request the on-demand service, for example, a delivery service or a transport service, using a user interface presented on the computing device. After a server for the on-demand service receives an order (also referred to as a “booking”) for the on-demand service from the user, the server may allocate a delivery service provider (who in some contexts herein may also be referred to as a “driver”, a “delivery partner” or a “delivery agent”) to the received order, and the delivery service provider may perform the on-demand service for the received order. For example, the delivery service provider may move to a destination (that in some contexts herein may also be referred to as a “drop-off point”, a “delivery point”, a “delivery location” or a “meeting point”) for the received order.

[0003] However, conventionally, the delivery service provider may often face a challenge of locating an exact destination, for example, an exact drop-off point, especially in complex last-mile conditions.

[0004] Therefore, there is a need to provide a solution for providing the delivery service provider with suitable information while the delivery service provider moves to the destination.

SUMMARY

[0005] According to various embodiments, there is a server for providing information for an on-demand service, the server comprising: a communication interface configured to receive a request for the on-demand service for a consumer from a first computing device; a memory configured to store instructions; and a processor for executing the stored instructions and configured to: control a second computing device associated with a delivery service provider to display a map relating to a route to a destination for providing the on-demand service, en route to the destination, wherein the map includes an image object indicating the destination; receive, from the second computing device, information about a distance from a location of the second computing device to the destination, en route to the destination; and determine whether to provide additional information on the image object, based on the distance from the location of the second computing device to the destination.

[0006] In some embodiments, the processor is further configured to, where the distance from the location of the second computing device to the destination is within a first predetermined distance, determine to provide first additional information on the image object; and control the second computing device to display the first additional information on the image object.

[0007] In some embodiments, the processor is further configured to, where the distance from the location of the second computing device to the destination is within a second predetermined distance which is shorter than the first predetermined distance, determine to

provide second additional information on the image object; and control the second computing device to display the second additional information on the image object.

[0008] In some embodiments, the processor is further configured to obtain information about the consumer from at least one of notes and/or chats of the consumer and information about one or more other consumers, to configure the additional information.

[0009] In some embodiments, the processor is further configured to, for a first consumer who has provided the notes and/or the chats, obtain information about the first consumer from the notes and/or the chats of the first consumer using a natural language processing model; and store the obtained information about the first consumer in the memory.

[0010] In some embodiments, the processor is further configured to, for a second consumer who has not provided the notes and/or the chats, obtain information about the second consumer from the information about the one or more other consumers selected based on a location.

[0011] In some embodiments, the image object is a pin indicating the destination; and the processor is further configured to, where the distance from the location of the second computing device to the destination is within the first predetermined distance, control the second computing device to display a featured pin displaying an image of the destination; and where the distance from the location of the second computing device to the destination is within the second predetermined distance, control the second computing device to display an expanded pin displaying the obtained information about the consumer.

[0012] In some embodiments, the processor is further configured to, where the distance from the location of the second computing device to the destination is within the first predetermined distance, control the second computing device to display a multi-information marker; and when the multi-information marker is selected, control the second computing device to display the additional information on the image object.

[0013] In some embodiments, the processor is further configured to, where the distance from the location of the second computing device to the destination is within the first predetermined distance and the additional information includes a plurality of different information, control the second computing device to cycle the plurality of different information at a predetermined time interval.

[0014] In some embodiments, the processor is further configured to, where the distance from the location of the second computing device to the destination is within the first predetermined distance and the additional information includes a plurality of different information, control the second computing device to display one or more different information among the plurality of different information based on a preference of the delivery service provider.

[0015] According to various embodiments, there is a method for providing information for an on-demand service, the method comprising: receiving a request for the on-demand service for a consumer from a first computing device; controlling a second computing device associated with a delivery service provider to display a map relating to a route to a destination for providing the on-demand service, en route to the destination, wherein the map includes an image object indicating the destination; receiving, from the second computing device, information about a distance from a location of the second computing device to the destination, en route to the destination; and determining whether to provide additional information on the image object, based on the distance from the location of the second computing device to the destination.

[0016] In some embodiments, the method further comprises: where the distance from the location of the second computing device to the destination is within a first predetermined distance, determining to provide first additional information on the image object; and

controlling the second computing device to display the first additional information on the image object.

[0017] In some embodiments, the method further comprises: where the distance from the location of the second computing device to the destination is within a second predetermined distance which is shorter than the first predetermined distance, determining to provide second additional information on the image object; and controlling the second computing device to display the second additional information on the image object.

[0018] In some embodiments, the method further comprises: obtaining information about the consumer from at least one of notes and/or chats of the consumer and information about one or more other consumers, to configure the additional information.

[0019] In some embodiments, the method further comprises: for a first consumer who has provided the notes and/or the chats, obtaining information about the first consumer from the notes and/or the chats of the first consumer using a natural language processing model; and storing the obtained information about the first consumer in a memory.

[0020] In some embodiments, the method further comprises: for a second consumer who has not provided the notes and/or the chats, obtaining information about the second consumer from the information about the one or more other consumers selected based on a location.

[0021] In some embodiments, the image object is a pin indicating the destination. In some embodiments, the method further comprises: where the distance from the location of the second computing device to the destination is within the first predetermined distance, controlling the second computing device to display a featured pin displaying an image of the destination; and where the distance from the location of the second computing device to the destination is within the second predetermined distance, controlling the second computing device to display an expanded pin displaying the obtained information about the consumer.

[0022] In some embodiments, the method further comprises: where the distance from the location of the second computing device to the destination is within the first predetermined distance, controlling the second computing device to display a multi-information marker; and when the multi-information marker is selected, controlling the second computing device to display the additional information on the image object.

[0023] In some embodiments, the method further comprises: where the distance from the location of the second computing device to the destination is within the first predetermined distance and the additional information includes a plurality of different information, controlling the second computing device to cycle the plurality of different information at a predetermined time interval.

[0024] In some embodiments, the method further comprises: where the distance from the location of the second computing device to the destination is within the first predetermined distance and the additional information includes a plurality of different information, controlling the second computing device to display one or more different information among the plurality of different information based on a preference of the delivery service provider.

[0025] According to various embodiments, a data processing apparatus configured to perform the method of any one of the above embodiments is provided.

[0026] 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.

[0027] 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

[0028] 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 providing information for an on-demand service according to various embodiments.
- FIG. 3 illustrates a block diagram of a server for providing information for an on-demand service according to various embodiments.
- FIG. 4 illustrates a flowchart for a method for providing information for an on-demand service according to various embodiments.
- FIG. 5 illustrates a data flow diagram of a server for providing information for an on-demand service according to various embodiments.
- FIG. 6 illustrates a data flow diagram of a front-end server and a back-end server for providing information for an on-demand service according to various embodiments.
- FIGS. 7 and 8 illustrate exemplary diagrams showing a user interface of a second computing device associated with a delivery service provider according to various embodiments.

DETAILED DESCRIPTION

[0029] 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.

[0030] 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.

[0031] 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.

[0032] 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.

[0033] As used herein, the term “and/or” includes any and all combinations of one or more of the associated listed items.

[0034] 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.

[0035] In the following, embodiments will be described in detail.

[0036] FIGS. 1 and 2 illustrate infrastructures of a system 200 including a server 100 for providing information for an on-demand service according to various embodiments.

[0037] 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 first computing device 160 associated with a user 161 (also referred to as a “requester”), a plurality of second computing devices 170 (not shown) each associated with a plurality of delivery service providers 171 (also referred to as a “driver”, a “delivery partner” or a “delivery agent”), and a plurality of third computing devices 180 (not shown) each associated with a plurality of item providers 181 (for example, “food providers” or “restaurants”). In some embodiments, the user 161 may include a consumer (also referred to as an “eater”) for the on-demand service. For example, the user 161 may be the same as the consumer. As another example, the user 161 may be different from the consumer and use the on-demand service for the consumer.

[0038] In some embodiments, the on-demand service may be a service allowing the user 161 to fulfill 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.

[0039] In some embodiments, the user 161 may use an application, for example, a mobile application, provided by a server 100. For example, the server 100 may be controlled and/or managed by an on-demand service platform provider. The application may be installed in the first computing device 160 associated with the user 161, to interact with 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 first computing device 160, between the server 100 and the plurality of

second computing devices 170, and between the server 100 and the plurality of third computing devices 180. 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 first computing device 160 and a second computing device 170a of the plurality of second computing devices 170.

[0041] In some embodiments, the first computing device 160 may be connectable to the server 100 via the network 150. In some embodiments, the first computing device 160 may be arranged in data or signal communication with the server 100 via the network 150. In some embodiments, the first 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 first computing device 160 may be associated with the user 161. For example, the first computing device 160 may belong to the user 161 who is the consumer. As another example, the first computing device 160 may belong to the user 161 requesting the delivery of the item to the consumer who is a recipient of the on-demand service. Although not shown, it may be appreciated that the system 200 may further include a plurality of first computing devices each associated with, for example, belonging to, a plurality of users.

[0042] In some embodiments, the first 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 first computing device 160. In some embodiments, the first computing device 160 may generate information about the location of the first 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 first computing device 160 via the network 150. In some embodiments, the first computing device 160 may receive a request (hereinafter, referred to as an “order”) from the user 161 for the on-demand service. The first computing device 160 may send the order to the server 100 via the network 150. In some embodiments, the first computing device 160 may send the information about the location of the first computing device 160 to the server 100 via the network 150. The location of the first computing device 160 may be considered as a location of the user 161. In some embodiments, the location of the user 161 may be considered as a destination of the on-demand service. In some other embodiments, the first computing device 160 may send information about an address of the user 161, and the address of the user 161 may be considered as the destination of the on-demand service. In some other embodiments, the first computing device 160 may send information about an address of the recipient of the delivery, and the address of the recipient may be considered as the destination of the on-demand service.

[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 second computing devices 170 via the network 150. In some embodiments, the plurality of second 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 second 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 second computing devices 170 may be associated with the plurality of delivery service providers 171 respectively. For example, the plurality of second computing devices 170 may belong to the plurality of delivery service providers 171 respectively.

[0047] In some embodiments, the server 100 may receive the order from the first computing device 160. After the server 100 receives the order from the first computing device 160, the server 100 may allocate (assign) the order to a suitable delivery service provider 171a. In some embodiments, the second computing device 170a associated with the delivery service provider 171a may send information about a location of the second computing device 170a to the server 100 via the network 150. The location of the second computing device 170a may be considered as a location of the delivery service provider 171a. In some embodiments, the location of the delivery service provider 171a may be considered as a current location of the delivery service provider 171a, and may change while the delivery service provider 171a moves to the destination (en route to the destination). In some embodiments, the server 100 may provide the second computing device 170a with a map relating to a route from the current location of the second computing device 170a (which may be considered as the location of the delivery service provider 171a) to the destination for providing the on-demand service, en route to the destination. In some embodiments, the map may include an image object, for example, a pin, indicating the destination.

[0048] In some embodiments, the server 100 may communicate with the plurality of third computing devices 180 via the network 150. In some embodiments, the plurality of third computing devices 180 may be arranged in data or signal communication with the server 100 via the network 150. In some embodiments, the plurality of third computing devices 180 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 third computing devices 180 may be associated with the plurality of item

providers 181 respectively. For example, the plurality of third computing devices 180 may belong to the plurality of item providers 181 respectively.

[0049] FIG. 3 illustrates a block diagram of a server 100 for providing information for an on-demand service 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 first 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 first 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 first computing device 160, and/or receive signals from the first computing device 160 via the network 150.

[0053] In some embodiments, the communication interface 110 may allow a plurality of second 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 second computing devices 170 may belong to each of a plurality of delivery service providers 171 who may pick up an item from an item service provider 181a and deliver the item to the consumer (i.e. a destination) and/or who may transport the consumer to the destination. In some embodiments, the communication interface 110 may transmit signals to the plurality of second computing devices 170, and/or receive signals from the plurality of second computing devices 170, via the network 150.

[0054] In some embodiments, the communication interface 110 may allow a plurality of third computing devices 180 to communicate with the processor 120 of the server 100 via the network 150, as shown in FIG. 1. As shown in FIG. 1, each of the plurality of third computing devices 180 may belong to each of a plurality of item providers who may prepare an item, for example, food, for the order. In some embodiments, the communication interface 110 may transmit signals to the plurality of third computing devices 180, and/or receive signals from the plurality of third computing devices 180, via the network 150.

[0055] 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.

[0056] 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 transmit/receive the signals.

[0057] In some embodiments, the communication interface 110 may receive a request (also referred to as an “order”) for the on-demand service from the first computing device 160 associated with the user 161 (also referred to as a “consumer 161”). In some embodiments,

the processor 120 may receive the order for the on-demand service from the communication interface 110. In some embodiments, the processor 120 may allocate the order to the delivery service provider 171a among the plurality of the delivery service providers 171. In some embodiments, the processor 120 may control the second computing device 170a associated with the delivery service provider 171a to display a map relating to a route to from a location of the second computing device 170a (which may be considered as the location of the delivery service provider 171a) to a destination for providing the on-demand service, while the delivery service provider 171a moves to the destination (en route to the destination). In some embodiments, the destination may be a location of the first computing device 160 (which may be considered as the location of the consumer (i.e. the user 161)). In some other embodiments, the destination may be a location of a recipient (consumer) of the on-demand service that the requester (i.e. the user 161) has designated. In some embodiments, the map may include an image object indicating the destination. For example, the image object includes a pin (for example, a normal pin) indicating the destination.

[0058] In some embodiments, the processor 120 may receive, from the second computing device 170a, information about a distance from the location of the second computing device 170a (which may be considered as the location of the delivery service provider 171a) to the destination, en route to the destination. In some embodiments, the processor 120 may receive the information about the distance from the second computing device 170a real-time. In some other embodiments, the processor 120 may receive the information about the distance from the second computing device 170a at predetermined time intervals.

[0059] In some embodiments, the processor 120 may determine whether to provide additional information on the image object, based on the distance from the location of the second computing device 170a (which may be considered as the location of the delivery service provider 171a) to the destination.

[0060] In some embodiments, where the distance from the location of the second computing device 170a (which may be considered as the location of the delivery service provider 171a) to the destination is greater than a first predetermined distance, the processor 120 may control the second computing device 170a to display the image object, for example, the pin, indicating the destination on the map. This pin may be referred to as the normal pin.

[0061] In some embodiments, where the distance from the location of the second computing device 170a (which may be considered as the location of the delivery service provider 171a) to the destination is within the first predetermined distance, the processor 120 may determine to provide first additional information on the image object, for example, the pin indicating the destination. In some embodiments, the processor 120 may control the second computing device 170a to display the first additional information on the image object, for example, the pin indicating the destination. As an example, the first additional information may include, but is not limited to, an image of the destination, and the processor 120 may control the second computing device 170a to display the pin displaying the image of the destination. This pin may be referred to as a featured pin. The second computing device 170a may display the featured pin displaying the image of the destination, such that the delivery service provider 171a may refer to the image of the destination where the distance from the location of the second computing device 170a to the destination is within the first predetermined distance, for example, 100m.

[0062] In some embodiments, where the distance from the location of the second computing device 170a to the destination is within a second predetermined distance which is shorter than the first predetermined distance, the processor 120 may determine to provide second additional information on the image object, for example, the pin, indicating the destination. In some embodiments, the processor 120 may control the second computing device 170a to display the second additional information on the image object, for example, the pin indicating

the destination. As an example, the second additional information may include, but is not limited to, obtained information about the consumer. In some embodiments, the processor 120 may obtain information about the consumer from at least one of notes and/or chats of the consumer (for example, notes and/or chats that the consumer has left) and information about one or more other consumers, to configure the additional information, for example, the second additional information. In some embodiments, the processor 120 may control the second computing device 170a to display the pin displaying the configured information about the consumer. This pin may be referred to as an expanded pin. The second computing device 170a may display the expanded pin displaying the configured information about the consumer, such that the delivery service provider 171a may refer to the configured information about the consumer where the distance from the location of the second computing device 170a to the destination is within the second predetermined distance, for example, 50m.

[0063] In some embodiments, the processor 120 may, for a consumer (hereinafter, referred to as a “first consumer”) who has provided the notes and/or the chats, obtain information about the first consumer from the notes and/or the chats of the first consumer using a natural language processing model. In some embodiments, the processor 120 may store the obtained information about the first consumer in the memory 130.

[0064] In some embodiments, the processor 120 may, for a consumer (hereinafter, referred to as a “second consumer”) who has not provided the notes and/or the chats, obtain information about the second consumer from the information about the one or more other consumers selected based on a location. In some embodiments, where the second consumer is located in a certain area, the processor 120 may select the one or more other consumers located in the certain area, and obtain the information about the one or more other consumers, and then use the obtained information about the one or more other consumers as the obtained information

about the second consumer. In some embodiments, a range of the certain area may be adjusted by the processor 120. For example, if a population of the certain area is high, the range of the certain area may be narrow. As another example, if the population of the certain area is low, the range of the certain area may be wide.

[0065] In some embodiments, the processor 120 may, where the distance from the location of the second computing device 170a (which may be considered as the location of the delivery service provider 171a) to the destination is within the first predetermined distance, control the second computing device 170a to display a multi-information (multiple information) marker on the map. For example, a normal marker (for example, the normal pin) may be switched to the multi-information marker, where the distance from the location of the second computing device 170a to the destination is within the first predetermined distance, for example, 100m. In some embodiments, when the multi-information marker is selected (for example, clicked or touched) by the delivery service provider 171a, the processor 120 may control the second computing device 170a to display the additional information on the image object, for example, on the pin. For example, where the distance from the location of the second computing device 170a to the destination is within the first predetermined distance, for example, 100m, when the multi-information marker is selected by the delivery service provider 171a, the processor 120 may control the second computing device 170a to display the featured pin displaying the image of the destination. As another example, where the distance from the location of the second computing device 170a to the destination is within the second predetermined distance, for example, 50m, when the multi-information marker is selected by the delivery service provider 171a, the processor 120 may control the second computing device 170a to display the expanded pin displaying the configured information about the consumer (for example, obtained from at least one of the notes and/or the chats of the consumer and the information about one or more other consumers).

[0066] In some embodiments, the processor 120 may, where the distance from the location of the second computing device 170a (which may be considered as the location of the delivery service provider 171a) to the destination is within the first predetermined distance, control the second computing device 170a to display the multi-information (multiple information) marker on the map. In some embodiments, the marker may show that multiple information is available. For example, the normal marker (for example, the normal pin) may be switched to the multi-information marker, where the distance from the location of the second computing device 170a to the destination is within the first predetermined distance, for example, 100m. In some embodiments, when the multi-information marker is selected (for example, clicked or touched) by the delivery service provider 171a, the processor 120 may control the second computing device 170a to display the additional information on the image object, for example, on the pin. In some embodiments, the processor 120 may combine the retrieved image of the destination and configured information about the consumer, for example, multiple notes of the consumer, to form a comprehensive multi-information marker which is then positioned on the map. For example, where the distance from the location of the second computing device 170a to the destination is within the first predetermined distance, for example, 100m, when the multi-information marker is selected by the delivery service provider 171a, the processor 120 may control the second computing device 170a to display the expanded pin displaying the image of the destination and the configured information about the consumer (for example, obtained from at least one of the notes and/or the chats of the consumer and the information about one or more other consumers).

[0067] In some embodiments, the processor 120 may, where the distance from the location of the second computing device 170a (which may be considered as the location of the delivery service provider 171a) to the destination is within the first predetermined distance and the additional information includes a plurality of different information, control the second

computing device 170a to cycle the plurality of different information at a predetermined time interval. For example, if there are two or more notes of the consumer, the processor 120 may cycle through these notes at the predetermined time interval for presentation.

[0068] In some embodiments, the processor 120 may, where the distance from the location of the second computing device 170a (which may be considered as the location of the delivery service provider 171a) to the destination is within the first predetermined distance and the additional information includes a plurality of different information, control the second computing device to display one or more different information among the plurality of different information based on a preference of the delivery service provider 171a. For example, if there are two or more notes of the consumer, the processor 120 may extract information about the preference of the delivery service provider 171a from historical data stored in the memory 130, and display the one or more different information based on the preference of the delivery service provider 171a. As another example, the processor 120 may request the delivery service provider 171a to select preferred information (for example, preferred notes), and then store the preference of the delivery service provider 171a in the memory 130 for the use in the future.

[0069] FIG. 4 illustrates a flowchart for a method 300 for providing information for an on-demand service according to various embodiments. According to various embodiments, the method 300 for providing the information for the on-demand service may be provided.

[0070] In some embodiments, the method 300 may include a step 301 of receiving a request for the on-demand service for a consumer from a first computing device associated with a user.

[0071] In some embodiments, the method 300 may include a step 302 of controlling a second computing device associated with a delivery service provider to display a map relating to a

route to a destination for providing the on-demand service, en route to the destination. In some embodiments, the map includes an image object indicating the destination.

[0072] In some embodiments, the method 300 may include a step 303 of receiving, from the second computing device, information about a distance from a location of the second computing device to the destination, en route to the destination.

[0073] In some embodiments, the method 300 may include a step 304 of determining whether to provide additional information on the image object, based on the distance from the location of the second computing device to the destination.

[0074] FIG. 5 illustrates a data flow diagram of a server 100 for providing information for an on-demand service according to various embodiments.

[0075] In some embodiments, the server 100 may address a challenge of summarising and displaying last mile information for deliveries on a map for accessing a specific unit by local knowledge mining using notes and/or chats of a consumer and a POI (point of interest) database. For example, a memory 130 and/or a database system 140 of the server 100 (as shown in FIG. 1) may include the POI database. As another example, the POI database may be external to the memory 130 and the database system 140 of the server 100. In some embodiments, the information that a processor 120 of the server 100 extract (mine) may include, but is not limited to, at least one of a POI level address, a building name, a compound name, a house number, a unit number, a colour (for example, “a door of a specific house is blue”), a nearby landmark, a meeting point, and a lift.

[0076] In some embodiments, the processor 120 of the server 100 may extract (mine) a local knowledge for a plurality of consumers, using notes and/or chats of the plurality of consumers, using a natural language processing model (including, but not limited to, large language models) and store the extracted local knowledge in the memory 130 of the server

100. In some embodiments, the extracted local knowledge may be stored offline as a knowledge base and displayed during a last mile of drop-off.

[0077] In some embodiments, for consumers who do not provide notes (also referred to as “second consumers”), the processor 120 may extract (mine) common attributes such as the colour (for example, the colour of the house) and the nearby landmark using other orders (bookings) for the same POI. While the delivery service provider is approaching the destination (for example, a drop off location), the processor 120 may visualise this information on the map, so that a second computing device 170a associated with the delivery service provider 171a may display this information on the map. The delivery service provider 171a may view this information on the map, en route to the destination.

[0078] In some embodiments, during an initial part of a journey to the destination, the processor 120 may control the second computing device 170a to show a normal pin for the drop off location. During the last 100m radius from the destination, the processor 120 may control the second computing device 170a to show a featured pin with a destination view image. During the last 50m of the destination (for example, the drop off location), the processor 120 may control the second computing device 170a to show an expanded pin with information mined from the notes and chats of the consumer in the delivery platform (for example, the server 100) as well as from the POI database. In some embodiments, during the last 50m of the destination, the processor 120 may control the second computing device 170a to further show the expanded pin with the destination view image or a more detailed destination view image.

[0079] FIG. 6 illustrates a data flow diagram of a front-end server and a back-end server for providing information for an on-demand service according to various embodiments. In some embodiments, a server 100 may include the front-end server and the back-end server.

[0080] In some embodiments, a front-end trigger and display logic may be that, when a delivery service provider 171a transitions to a new stage (for example, for each waypoint, pick-up point(s) and drop-off point(s)), the server 100 may initiate a request to the back-end server to retrieve notes relating to the consumer. For example, when the delivery service provider 171a transitions to the new stage, for example, a pick-up point 1, a pick-up point 2, a drop-off point 1, or a drop-off point 2, the server 100 may initiate the request to the back-end server to retrieve the notes relating to the consumer. The notes may include, but are not limited to, messages left by the consumers, passengers, eaters, and/or merchants, and image information and critical information from a POI database.

[0081] In some embodiments, the back-end server may obtain information from two sources. For example, one source may be a place service, which may search the POI database to obtain at least one of an address type, an imagery, a unit number, a house number and a building name of the pick-up/drop-off POI. For example, the other source may be using an NLP (natural language processing) model which may include a natural language processing model, using a knowledge parsed by the model (if the consumer left notes and the notes are stored) or inferred by the model (if the consumer did not leave the notes).

[0082] In some embodiments, the back-end server may combine the information obtained from the two sources. In some embodiments, regarding the notes that the consumer left may be further timely than data stored in the POI database, the back-end server may first use the natural language processing model to provide the knowledge and then use POI related information as a fall-back. In some embodiments, the server 100 may use the combined information as additional information to provide on an image object on a map, where a distance from a location of the second computing device 170a to a destination is within a first predetermined distance.

[0083] In some embodiments, as for an order in which the information is displayed, since different markets may have different living types of consumers, there may be different priorities for key information provided. The back-end server may re-order the key information based on the priorities, to provide correct or suitable guidance for the delivery service provider 171a. For example, the back-end server may select the key information based on characteristics of the consumers, for example, the markets that the consumers belong to, and display the key information on the image object on the map, where the distance from the location of the second computing device 170a to the destination is within the first predetermined distance.

[0084] FIGS. 7 and 8 illustrate exemplary diagrams showing a user interface of a second computing device 170a associated with a delivery service provider 171a according to various embodiments.

[0085] In some embodiments, as shown in FIG. 7, a processor 120 of a server 100 may provide the second computing device 170a associated with the second delivery service provider 171a with a map 172 relating to a route from a current location of the second computing device 170a (which may be considered as a location of the delivery service provider 171a) to a destination for providing the on-demand service, while the second delivery service provider 171a moves to the destination. In some embodiments, as shown in FIG. 7, the map 172 may include an image object, for example, a pin (for example, a normal pin 173a), indicating the destination.

[0086] In some embodiments, as shown in FIG. 8(a), where the distance from the location of the second computing device 170a (which may be considered as the location of the delivery service provider 171a) to the destination is greater than a first predetermined distance (for example, more than 100m), the processor 120 may control the second computing device 170a to display the normal pin 173a which may simply indicate the destination. The second

computing device 170a may display the normal pin 173a which may simply indicate the destination.

[0087] In some embodiments, as shown in FIG. 8(b), where the distance from the location of the second computing device 170a (which may be considered as the location of the delivery service provider 171a) to the destination is within the first predetermined distance (for example, within 100m), the processor 120 may control the second computing device 170a to display a featured pin 173b displaying an image of the destination. The second computing device 170a may display the featured pin 173b displaying the image of the destination, such that the delivery service provider 171a may refer to the image of the destination where the distance from the location of the second computing device 170a to the destination is within the first predetermined distance.

[0088] In some embodiments, as shown in FIG. 8(c), where the distance from the location of the second computing device 170a (which may be considered as the location of the delivery service provider 171a) to the destination is within a second predetermined distance (for example, within 50m), the processor 120 may control the second computing device 170a to display an expanded pin 173c displaying configured information about the consumer. For example, the processor 120 may control the second computing device 170a to display an expanded pin 173c displaying the image of the destination along with the configured information about the consumer. The second computing device 170a may display the expanded pin 173c displaying the image of the destination along with the configured information about the consumer, such that the delivery service provider 171a may refer to the image of the destination along with the configured information about the consumer where the distance from the location of the second computing device 170a to the destination is within the second predetermined distance. In some embodiments, the image of the destination included in the expanded pin 173c and the image of the destination included in the featured

pin 173b may be the same. In some other embodiments, the image of the destination included in the expanded pin 173c and the image of the destination included in the featured pin 173b may be different from each other. For example, the image of the destination included in the expanded pin 173c may be a more detailed image of the destination than that included in the featured pin 173b.

[0089] In some embodiments, a quick display of information, for example, all the essential information, during the last mile of drop-off to the delivery service provider 171a as described with reference to FIG. 8 may help the delivery service provider 171a locate the delivery point (i.e. destination) in an efficient manner. Presenting this information in a standardized format may help the delivery service provider 171a quickly locate the delivery point (i.e. destination).

[0090] As described above, the server 100 according to various embodiments may provide a last mile knowledge display system that may improve delivery efficiency to access a drop-off unit. The last mile knowledge system may be integrated into a navigation function provided by the server 100, and the last mile knowledge may automatically appear on the user interface of the second computing device 170a when the delivery service provider 171a reaches the last mile of the drop-off process. The server 100 according to various embodiments may improve the efficiency and convenience of deliveries in such communities.

[0091] In some embodiments, the server 100 according to various embodiments may be applicable to some offline services that may need to visit customers' units by their addresses, for example, long-distance express and housing cleaning services.

[0092] 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 providing information for an on-demand service, the server comprising:
a communication interface configured to receive a request for the on-demand service for a consumer from a first computing device;
a memory configured to store instructions; and
a processor for executing the stored instructions and configured to:
control a second computing device associated with a delivery service provider to display a map relating to a route to a destination for providing the on-demand service, en route to the destination, wherein the map includes an image object indicating the destination;
receive, from the second computing device, information about a distance from a location of the second computing device to the destination, en route to the destination; and
determine whether to provide additional information on the image object, based on the distance from the location of the second computing device to the destination.
2. The server according to claim 1, wherein the processor is further configured to, where the distance from the location of the second computing device to the destination is within a first predetermined distance, determine to provide first additional information on the image object; and control the second computing device to display the first additional information on the image object.
3. The server according to claim 2, wherein the processor is further configured to, where the distance from the location of the second computing device to the destination is within a second predetermined distance which is shorter than the first predetermined distance,

determine to provide second additional information on the image object; and control the second computing device to display the second additional information on the image object.

4. The server according to claim 2 or claim 3, wherein the processor is further configured to obtain information about the consumer from at least one of notes and/or chats of the consumer and information about one or more other consumers, to configure the additional information.

5. The server according to claim 4, wherein the processor is further configured to, for a first consumer who has provided the notes and/or the chats, obtain information about the first consumer from the notes and/or the chats of the first consumer using a natural language processing model; and store the obtained information about the first consumer in the memory.

6. The server according to claim 4 or claim 5, wherein the processor is further configured to, for a second consumer who has not provided the notes and/or the chats, obtain information about the second consumer from the information about the one or more other consumers selected based on a location.

7. The server according to claim 4, wherein the image object is a pin indicating the destination; and

the processor is further configured to, where the distance from the location of the second computing device to the destination is within the first predetermined distance, control the second computing device to display a featured pin displaying an image of the destination; and

where the distance from the location of the second computing device to the destination is within the second predetermined distance, control the second computing device to display an expanded pin displaying the obtained information about the consumer.

8. The server according to any one of claims 2 to 7, wherein the processor is further configured to, where the distance from the location of the second computing device to the destination is within the first predetermined distance, control the second computing device to display a multi-information marker; and

when the multi-information marker is selected, control the second computing device to display the additional information on the image object.

9. The server according to any one of claims 2 to 8, wherein the processor is further configured to, where the distance from the location of the second computing device to the destination is within the first predetermined distance and the additional information includes a plurality of different information, control the second computing device to cycle the plurality of different information at a predetermined time interval.

10. The server according to any one of claims 2 to 8, wherein the processor is further configured to, where the distance from the location of the second computing device to the destination is within the first predetermined distance and the additional information includes a plurality of different information, control the second computing device to display one or more different information among the plurality of different information based on a preference of the delivery service provider.

11. A method for providing information for an on-demand service, the method comprising:

receiving a request for the on-demand service for a consumer from a first computing device;

controlling a second computing device associated with a delivery service provider to display a map relating to a route to a destination for providing the on-demand service, en route to the destination, wherein the map includes an image object indicating the destination;

receiving, from the second computing device, information about a distance from a location of the second computing device to the destination, en route to the destination; and

determining whether to provide additional information on the image object, based on the distance from the location of the second computing device to the destination.

12. The method according to claim 11 further comprising: where the distance from the location of the second computing device to the destination is within a first predetermined distance, determining to provide first additional information on the image object; and controlling the second computing device to display the first additional information on the image object.

13. The method according to claim 12 further comprising: where the distance from the location of the second computing device to the destination is within a second predetermined distance which is shorter than the first predetermined distance, determining to provide second additional information on the image object; and controlling the second computing device to display the second additional information on the image object.

14. The method according to claim 12 or claim 13 further comprising: obtaining information about the consumer from at least one of notes and/or chats of the consumer and information about one or more other consumers, to configure the additional information.

15. The method according to claim 14 further comprising: for a first consumer who has provided the notes and/or the chats, obtaining information about the first consumer from the notes and/or the chats of the first consumer using a natural language processing model; and storing the obtained information about the first consumer in a memory.

16. The method according to claim 14 or claim 15 further comprising: for a second consumer who has not provided the notes and/or the chats, obtaining information about the second consumer from the information about the one or more other consumers selected based on a location.

17. The method according to claim 14, wherein the image object is a pin indicating the destination; and

the method further comprises:

where the distance from the location of the second computing device to the destination is within the first predetermined distance, controlling the second computing device to display a featured pin displaying an image of the destination; and

where the distance from the location of the second computing device to the destination is within the second predetermined distance, controlling the second computing device to display an expanded pin displaying the obtained information about the consumer.

18. The method according to any one of claims 12 to 17 further comprising: where the distance from the location of the second computing device to the destination is within the first predetermined distance, controlling the second computing device to display a multi-information marker; and

when the multi-information marker is selected, controlling the second computing device to display the additional information on the image object.

19. The method according to any one of claims 12 to 18 further comprising: where the distance from the location of the second computing device to the destination is within the first predetermined distance and the additional information includes a plurality of different information, controlling the second computing device to cycle the plurality of different information at a predetermined time interval.

20. The method according to any one of claims 12 to 18 further comprising: where the distance from the location of the second computing device to the destination is within the first predetermined distance and the additional information includes a plurality of different information, controlling the second computing device to display one or more different information among the plurality of different information based on a preference of the delivery service provider.