

RESOURCE ALLOCATION METHOD, APPARATUS, DEVICE, STORAGE MEDIUM AND COMPUTER PROGRAM

CROSS-REFERENCE TO RELATED APPLICATION

[0001] The present disclosure claims the priority of Chinese patent application No. 201911380409.X filed with Chinese Patent Office on December 27, 2019, the disclosure of which is incorporated herein by reference in its entirety.

TECHNICAL FIELD

[0002] The present disclosure relates to a resource allocation method, apparatus, device, storage medium and computer program.

BACKGROUND

[0003] In practice, for customers, also known as objects, who visit a place such as a store, their data usually need to be artificially processed, so that resources of the current place are allocated based on the processed data. However, this existing resource allocation scheme is not only time-consuming and labor-intensive, but also difficult to reasonably allocate limited resources. Therefore, there is an urgent need for a resource allocation method to solve the above technical problems.

SUMMARY

[0004] The present disclosure provides a technical solution of a resource allocation method.

[0005] In a first aspect, embodiments of the present disclosure provide a resource allocation method. The method includes: obtaining visiting data of objects making their visit within a preset time range; determining a ratio parameter based on the visiting data of a first type of objects and the visiting data of a second type of objects; adjusting, based on the ratio parameter and basic data of the objects, a resource allocation scheme for at least a part of the objects; and performing a resource allocation in accordance with the adjusted resource allocation scheme.

[0006] Optionally, the above solution further includes: determining the first type of objects among the objects, where the object that has a cumulative visiting duration less than a first time threshold till a preset time point and/or makes a first visit is determined as the first type of object; and determining the second type of objects among the objects,

where the object that has the cumulative visiting duration greater than or equal to a second time threshold till the preset time point and/or makes a non-first visit is determined as the second type of object.

[0007] Optionally, in the above solutions, the visiting data includes a visitor number, and the ratio parameter includes at least one item of: a ratio of the visitor number of the first type of objects to the visitor number of the second type of objects, a ratio of the visitor number of the second type of objects to the visitor number of the first type of objects, a ratio of the visitor number of the first type of objects to a target visitor number, or a ratio of the visitor number of the second type of objects to the target visitor number, where the target visitor number includes a sum of the visitor number of the first type of objects and the visitor number of the second type of objects, or includes a total visitor number within the preset time range.

[0008] Optionally, before obtaining the visiting data of the objects making their visit within the preset time range, the above solutions further include: acquiring an image in real time; performing an image recognition on the image to obtain one or more image recognition results; matching each image recognition result in a database in response to determining that the image recognition result includes a human-face feature and/or a human-body feature; in response to determining that an image template in the database is matched, updating a historical visiting record and the basic data stored in association with the image template; and in response to determining that no image template in the database is matched, adding the image recognition result as the image template of a corresponding object, and storing the image template in association with collected basic data of the corresponding object and a newly-added historical visiting record.

[0009] Optionally, in the above solution, the historical visiting record and the basic data are associatively stored in a form of tag information.

[0010] Optionally, in the above solutions, adjusting, based on the ratio parameter and the basic data of the objects, the resource allocation scheme for at least the part of the objects includes: determining target resource allocation schemes that match a preset condition; and adjusting, based on the ratio parameter and the target resource allocation schemes, the resource allocation scheme for at least the part of the objects, where the basic data of at least the part of the objects meets the preset condition.

[0011] Optionally, in the above solution, adjusting, based on the ratio parameter and the target resource allocation schemes, the resource allocation scheme for at least the part of

the objects includes: in a case where the ratio parameter indicates that the visiting data of the second type of objects meets a first preset condition, determining a resource allocation scheme for the second type of objects among the target resource allocation schemes; and/or, in a case where the ratio parameter indicates that the visiting data of the first type of objects meets a second preset condition, determining a resource allocation scheme for the first type of objects among the target resource allocation schemes.

[0012] Optionally, in the above solutions, resources include online resources and/or offline resources, the online resources include website-based service resources, and the offline resources include physical store-based service resources; and adjusting the resource allocation scheme includes: adjusting online resource configuration data and/or offline resource configuration data.

[0013] Optionally, in the above solution, the online resource configuration data includes at least one item of selling price, after-sales service, or pushing mode of resource configuration data; and the offline resource configuration data includes at least one item of assistant or follow-up staff, selling price, after-sales service, or pushing mode of resource configuration data, where the pushing mode of resource configuration data includes at least one item of pushing time of resource configuration data, pushing interval between two adjacent resource configuration data pushes, or pushing path of resource configuration data.

[0014] Optionally, the above solutions further include: evaluating the resource configuration data based on the ratio parameter; and adjusting the resource allocation scheme based on the evaluation result.

[0015] In a second aspect, embodiments of the present disclosure provide a resource allocation apparatus. The apparatus includes: an obtaining module, configured to obtain visiting data of objects making their visit within a preset time range; a determining module, configured to determine a ratio parameter based on the visiting data of a first type of objects and the visiting data of a second type of objects; and an allocating module, configured to adjust, based on the ratio parameter and basic data of the objects, a resource allocation scheme for at least a part of the objects and perform a resource allocation in accordance with the adjusted resource allocation scheme.

[0016] Optionally, in the above solution, the determining module is configured to: determine the first type of objects among the objects, where the object that has a cumulative visiting duration less than a first time threshold till a preset time point and/or

makes a first visit is determined as the first type of object; and determine the second type of objects among the objects, where the object that has the cumulative visiting duration greater than or equal to a second time threshold till the preset time point and/or makes a non-first visit is determined as the second type of object.

[0017] Optionally, in the above solutions, the visiting data includes a visitor number, and the ratio parameter includes at least one item of: a ratio of the visitor number of the first type of objects to the visitor number of the second type of objects, a ratio of the visitor number of the second type of objects to the visitor number of the first type of objects, a ratio of the visitor number of the first type of objects to a target visitor number, or a ratio of the visitor number of the second type of objects to the target visitor number, where the target visitor number includes a sum of the visitor number of the first type of objects and the visitor number of the second type of objects, or includes a total visitor number within the preset time range.

[0018] Optionally, in the above solutions, the obtaining module is configured to: acquire an image in real time; perform an image recognition on the image to obtain one or more image recognition results; match each image recognition result in a database in response to determining that the image recognition result includes a human-face feature and/or a human-body feature; in response to determining that an image template in the database is matched, update a historical visiting record and the basic data stored in association with the image template; and in response to determining that no image template in the database is matched, add the image recognition result as the image template of a corresponding object, and store the image template in association with collected basic data of the corresponding object and a newly-added historical visiting record.

[0019] Optionally, in the above solution, the obtaining module is configured to associatively store the historical visiting record and the basic data in a form of tag information.

[0020] Optionally, in the above solutions, the allocating module is configured to: determine target resource allocation schemes that match a preset condition; and adjust, based on the ratio parameter and the target resource allocation schemes, the resource allocation scheme for at least the part of the objects, where the basic data of at least the part of the objects meets the preset condition.

[0021] Optionally, in the above solution, the allocating module is configured to: in a case where the ratio parameter indicates that the visiting data of the second type of objects

meets a first preset condition, determine a resource allocation scheme for the second type of objects among the target resource allocation schemes; and/or, in a case where the ratio parameter indicates that the visiting data of the first type of objects meets a second preset condition, determine a resource allocation scheme for the first type of objects among the target resource allocation schemes.

[0022] Optionally, in the above solutions, resources include online resources and/or offline resources, the online resources include website-based service resources, and the offline resources include physical store-based service resources; and the allocating module is configured to: adjust online resource configuration data and/or offline resource configuration data.

[0023] Optionally, in the above solution, the online resource configuration data includes at least one item of selling price, after-sales service, or pushing mode of resource configuration data; and the offline resource configuration data includes at least one item of assistant or follow-up staff, selling price, after-sales service, or pushing mode of resource configuration data, where the pushing mode of resource configuration data includes at least one item of pushing time of resource configuration data, pushing interval between two adjacent resource configuration data pushes, or pushing path of resource configuration data.

[0024] Optionally, in the above solutions, the allocating module is further configured to: evaluate the resource configuration data based on the ratio parameter; and adjust the resource allocation scheme based on the evaluation result.

[0025] In a third aspect, embodiments of the present disclosure provide a resource allocation device, including: a memory, one or more processors, and a computer program stored on the memory and running on the one or more processors, where the one or more processors, when executing the computer program, implement the resource allocation methods described in the embodiments of the present disclosure.

[0026] In a fourth aspect, embodiments of the present disclosure provide a storage medium storing a computer program, where the computer program, when being executed by one or more processors, makes the one or more processors perform the resource allocation methods described in the embodiments of the present disclosure.

[0027] In a fifth aspect, embodiments of the present disclosure provide a computer program including computer executable codes, where the computer executable codes,

when running on a device, make one or more processors in the device perform the resource allocation methods described in the embodiments of the present disclosure.

[0028] According to the technical solutions provided by the embodiments of the present disclosure, visiting data of objects making their visit within a preset time range is obtained, a ratio parameter is determined based on the visiting data of a first type of objects and the visiting data of a second type of objects, a resource allocation scheme for at least a part of the objects is adjusted based on the ratio parameter and basic data of the objects, and a resource allocation is performed in accordance with the adjusted resource allocation scheme. In this way, the time spent in processing data can be saved, that is, the time-consuming and labor-intensive problem caused by manual data processing is solved. In addition, the resource allocation scheme for at least the part of the objects is adjusted based on the basic data and the ratio parameter that is determined based on the visiting data of the first type of objects and the visiting data of the second type of objects within the preset time range, which ensures a reasonable allocation of limited resources. Also, the resources are allocated in accordance with the adjusted resource allocation scheme, which can further improve customer experience and sales conversion rate.

BRIEF DESCRIPTION OF THE DRAWINGS

[0029] FIG. 1 is a schematic implementation flow chart of a resource allocation method provided according to examples of the present disclosure.

[0030] FIG. 2 is a schematic implementation flow chart of another resource allocation method provided according to examples of the present disclosure.

[0031] FIG. 3 is a schematic diagram of object notification interface outputted at a terminal side provided according to examples of the present disclosure.

[0032] FIG. 4 is a schematic diagram of a statistic display interface provided according to examples of the present disclosure.

[0033] FIG. 5 is a schematic structure diagram of a resource allocation apparatus provided according to examples of the present disclosure.

[0034] FIG. 6 is a schematic structure diagram of another resource allocation apparatus provided according to examples of the present disclosure.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0035] The technical solutions of the present disclosure will be described in detail below with reference to accompanying drawings and examples.

[0036] To make a person skilled in the art better understand technical solutions according to the examples of the present disclosure, the technical solutions provided by the examples of the present disclosure will be clearly described below with reference to the accompanying drawings in the examples of the present disclosure. Obviously, the examples described are just a part but not all of examples of the present disclosure.

[0037] The terms “first”, “second”, “third” and the like in the described examples and claims of the present disclosure and the drawings described above are used to distinguish similar objects, but not used to describe a particular order or sequence. Moreover, the terms “comprising/including” and “having” and any variation thereof, are intended to cover non-exclusive inclusion, e. g., the inclusion of a series of steps or units. The method, system, product or device is not limited to those steps or units that are explicitly listed, but may include other steps or units that are not explicitly listed or that are inherent to the process, method, product or device.

[0038] The examples of the present disclosure may be applied to various electronic devices, which include but are not limited to fixed devices and/or mobile devices. For example, the fixed devices include but are not limited to a personal computer (PC), a server or the like. The server may be a cloud server or a general server. The mobile devices include but are not limited to one or more of a mobile phone, a tablet or a wearable device.

[0039] The examples of the present disclosure provide a resource allocation method. As illustrated in FIG. 1, the method mainly includes the following steps.

[0040] At step 101, visiting data of objects making their visit within a preset time range is obtained.

[0041] At step 102, a ratio parameter is determined based on the visiting data of a first type of objects and the visiting data of a second type of objects. The ratio parameter may reflect a visiting status of different types of objects within the preset time range.

[0042] At step 103, a resource allocation scheme for at least a part of the objects is adjusted based on the ratio parameter and basic data of the objects, and a resource allocation is performed in accordance with the adjusted resource allocation scheme.

[0043] In the examples of the present disclosure, the preset time range may include a period of time from starting time to ending time, such as one day, one week, one month, one quarter, half of one year, one year. The preset time range may be determined according to actual requirements. The examples of the present disclosure do not limit specific setting ways and specific values of the preset time range. It should be noted that the ending time is before a current moment (and may include the current moment).

[0044] In the examples of the present disclosure, different division criteria may be adopted according to requirements to distinguish between the first type of objects and the second type of objects among the objects making their visit within the preset time range.

[0045] In some examples, the first type of objects and the second type of objects are divided according to whether they make a first visit. In particular, the first type of objects include the object that makes the first visit, that is, a new customer; and the second type objects include the object that makes a non-first visit, that is, a regular customer. As an example, customer A is determined as the first type of object if he visits a store for the first time, customer B is determined as the second type of object if he visits the store for the second time, and customer C is also determined as the second type of object if he visits the store for the third time.

[0046] In some more examples, the first type of objects and the second type of objects are divided according to a cumulative visiting duration. In particular, the first type of objects includes the object that has a cumulative visiting duration less than a first time threshold till a preset time point, and the second type of objects includes the object that has a cumulative visiting duration greater than or equal to a second time threshold till the preset time point. The preset time point may be set according to requirements, for example, within or before the preset time range. Further, being within the preset time range means at a starting time point, at an ending time point of the preset time range, or at any designated time point between the starting time point and the ending time point. The first time threshold may be identical with or different from the second time threshold. For example, the first time threshold may be less than, equal to, or greater than the second time threshold. As an example, customer A is determined as the first type of object if he has the cumulative visiting duration less than the first time threshold till the preset time point, and customer B is determined as the second type of object if he has the cumulative visiting duration greater than or equal to the second time threshold till the preset time point. Different from the division criterion based on whether it is the first visit, customer A who

makes his visit for the first time is still determined as the second type of object as his cumulative visiting duration till the preset time point is greater than or equal to the second time threshold, and customer B who makes his visit for the second time is still determined as the first type of object as his cumulative visiting duration is less than the first time threshold. In this way, a length of the cumulative visiting duration shows a degree of a purchase demand. For example, the shorter cumulative visiting duration indicates a lower purchase demand, and the longer cumulative visiting duration indicates a higher purchase demand. The cumulative visiting duration may not be set with a starting point, that is, being the total cumulative visiting duration since his first visit. Alternatively, the cumulative visiting duration may be calculated from a second preset time point that may be set before the above-mentioned preset time point according to requirements.

[0047] In some more examples, the first type of objects and the second type of objects are divided based on both whether it is the first visit and the cumulative visiting duration. For example, the first type of objects include the object that makes the first visit and has the cumulative visiting duration less than the first time threshold till the preset time point, and the second type of objects include the object that makes the non-first visit and has the cumulative visiting duration greater than or equal to the second time threshold till the preset time point. As an example, for the customer A who makes the first visit, it is to determine whether he has the cumulative visiting duration less than the first time threshold till the preset time point, and if yes, he is determined as the first type of object. And, for the customer B who makes the non-first visit, it is to determine whether he has the cumulative visiting duration greater than or equal to the second time threshold till the preset time point, and if yes, he is determined as the second type of object.

[0048] The first time threshold and the second time threshold are both preset. The above time thresholds may be set in advance according to invested time, cost, etc., and/or requirements, without limiting their setting ways here.

[0049] In the examples of the present disclosure, the visiting data indicates the information of the objects, such as a visitor number and a trend thereof. The ratio parameter is configured to reflect the visit status of different types of objects within the preset time range. For example, supposing that the visiting data of the first type of objects visiting within the preset time range is a first visitor number and the visiting data of the second type of objects visiting within the preset time range is a second visitor number, the ratio parameter includes at least one item of: a ratio of the first visitor number to the

second visitor number, a ratio of the second visitor number to the first visitor number, a ratio of the first visitor number to a target visitor number, or a ratio of the second visitor number to the target visitor number.

[0050] The target visitor number includes a sum of the first visitor number and the second visitor number, or includes a total visitor number within the preset time range.

[0051] The ratio of the first visitor number to the second visitor number may reflect a comparison between the visitor number of the first type of objects and the visitor number of the second type of objects within the preset time range. For example, the ratio of the first visitor number to the second visitor number is $A1/B1$ when within the preset time range, the number of the persons who make the first visit is $A1$ and the number of the persons who make the non-first visit is $B1$. For another example, the ratio of the first visitor number to the second visitor number is $A2/B2$ when within the preset time range, the number of the persons whose cumulative visiting duration till the preset time point is less than the first time threshold is $A2$ and the number of the persons whose cumulative visiting duration till the preset time point is greater than or equal to the second time threshold is $B2$. For another example, the ratio of the first visitor number to the second visitor number is $A3/B3$ when within the preset time range, the number of the persons who make the first visit and whose cumulative visiting duration till the preset time point is less than the first time threshold is $A3$ and the number of the persons who make the non-first visit and whose cumulative visiting duration till the preset time point is greater than or equal to the second time threshold is $B3$.

[0052] The ratio of the second visitor number to the first visitor number may reflect a comparison between the visitor number of the second type of objects and the visitor number of the first type of objects within the preset time range. For example, the ratio of the second visitor number to the first visitor number is $B1/A1$ when within the preset time range, the number of the persons who make the first visit is $A1$ and the number of the persons who make the non-first visit is $B1$. For another example, the ratio of the second visitor number to the first visitor number is $B2/A2$ when within the preset time range, the number of the persons whose cumulative visiting duration till the preset time point is less than the first time threshold is $A2$ and the number of the persons whose cumulative visiting duration and till the preset time point is greater than or equal to the second time threshold is $B2$. For another example, the ratio of the second visitor number to the first visitor number is $B3/A3$ when within the preset time range, the number of the persons who

make the first visit and whose cumulative visiting duration till the preset time point is less than the first time threshold is A_3 and the number of the persons who make the non-first visit and whose cumulative visiting duration till the preset time point is greater than or equal to the second time threshold is B_3 .

[0053] The ratio of the first visitor number to the target visitor number may reflect a comparison between the visitor number of the first type of objects and the visitor number of target objects within the preset time range. In a case where the target visitor number includes the total visitor number within the preset time range, the ratio of the first visitor number to the target visitor number may reflect a proportion of the first type of objects in all the objects who make their visit within the preset time range. For example, the ratio of the first visitor number to the total visitor number is A_1/Q , i.e., A_1/A_1+B_1 , when within the preset time range, the number of the persons who make the first visit is A_1 , the number of the persons who make the non-first visit is B_1 , and thus the total visitor number is $A_1+B_1=Q$. For another example, the ratio of the first visitor number to the total visitor number is A_2/Q when within the preset time range, the number of the persons whose cumulative visiting duration till the preset time point is less than the first time threshold is A_2 and the total visitor number is Q . For another example, the ratio of the first visitor number to the total visitor number is A_3/Q when within the preset time range, the number of the persons who make the first visit and whose cumulative visiting duration till the preset time point is less than the first time threshold is A_3 and the total visitor number is Q . In a case where the target objects include a collection of the first type of objects and the second type of objects that make their visit within the preset time range, the ratio of the first visitor number to the target visitor number may reflect a proportion of the first type of objects in the sum of the first type of objects and the second type of objects. For example, the ratio of the first visitor number to the sum of the first visitor number and the second visitor number is A_1/A_1+B_1 when within the preset time range, the number of the persons who make the first visit is A_1 and the number of the persons who make the non-first visit is B_1 . For another example, the ratio of the first visitor number to the sum of the first visitor number and the second visitor number is A_2/A_2+B_2 when within the preset time range, the number of the persons whose cumulative visiting duration till the preset time point is less than the first time threshold is A_2 and the number of the persons whose cumulative visiting duration till the preset time point is greater than or equal to the second time threshold is B_2 . For another example, the ratio of the first visitor number to the sum

of the first visitor number and the second visitor number is $A3/A3+B3$ when within the preset time range, the number of the persons who make the first visit and whose cumulative visiting duration till the preset time point is less than the first time threshold is $A3$ and the number of the persons who make the non-first visit and whose cumulative visiting duration till the preset time point is greater than or equal to the second time threshold is $B3$.

[0054] The ratio of the second visitor number to the target visitor number may reflect a comparison between the visitor number of the second type of objects and the visitor number of target objects within the preset time range. In a case where the target visitor number includes the total visitor number within the preset time range, the ratio of the second visitor number to the target visitor number may reflect a proportion of the second type of objects in all the objects who make their visit within the preset time range. For example, the ratio of the second visitor number to the total visitor number is $B1/Q$, i.e., $B1/A1+B1$, when within the preset time range, the number of the persons who make the first visit is $A1$, the number of the persons who make the non-first visit is $B1$, and thus the total visitor number is $A1+B1=Q$. For another example, the ratio of the second visitor number to the total visitor number is $B2/Q$ when within the preset time range, the number of the persons whose cumulative visiting duration till the preset time point is greater than or equal to the second time threshold is $B2$ and the total visitor number is Q . For another example, the ratio of the second visitor number to the total visitor number is $B3/Q$ when within the preset time range, the number of the persons who make the non-first visit and whose cumulative visiting duration till the preset time point is greater than or equal to the second time threshold is $B3$ and the total visitor number is Q . In a case where the target objects include a collection of the first type of objects and the second type of objects that make their visit within the preset time range, the ratio of the second visitor number to the target visitor number may reflect a proportion of the second visitor number in the sum of the first visitor number and the second visitor number. For example, the ratio of the second visitor number to the sum of the first visitor number and the second visitor number is $B1/A1+B1$ when within the preset time range, the number of the persons who make the first visit is $A1$ and the number of the persons who make the non-first visit is $B1$. For another example, the ratio of the second visitor number to the sum of the first visitor number and the second visitor number is $B2/A2+B2$ when within the preset time range, the number of the persons whose cumulative visiting duration till the preset time point is

less than the first time threshold is A_2 and the number of the persons whose cumulative visiting duration till the preset time point is greater than or equal to the second time threshold is B_2 . For another example, the ratio of the second visitor number to the sum of the first visitor number and the second visitor number is B_3/A_3+B_3 when within the preset time range, the number of the persons who make the first visit and whose cumulative visiting duration till the preset time point is less than the first time threshold is A_3 and the number of the persons who make the non-first visit and whose cumulative visiting duration till the preset time point is greater than or equal to the second time threshold is B_3 .

[0055] In the examples of the present disclosure, the basic data is configured to indicate the characteristics of the objects. For example, the basic data may include at least one item of age, gender, career, education, income level, or the like.

[0056] In the examples of the present disclosure, at least the part of the objects include the objects whose basic data meets a preset condition. The preset conditions may be set in advance according to invested time, cost, etc., and/or requirements, without limiting their setting ways here. For example, at least the part of the objects may include the objects that bring valid data, such as the objects whose cumulative visiting duration exceeds a certain time threshold, the regular customers and the contracted customers.

[0057] Further, the resource allocation scheme may be adjusted for at least the part of the objects. For example, a new-to-regular customer ratio and an age group from 25 to 35 may be combined as the preset condition to adjust the resource allocation scheme for at least the part of objects whose basic data meets the preset condition. For another example, a regular-to-new customer ratio and being male may be combined as the preset condition to adjust the resource allocation scheme for at least the part of objects whose basic data meets the preset condition. For another example, a proportion of the new customers in all the objects and an income level more than 300 thousand may be combined as the preset condition to adjust the resource allocation scheme.

[0058] According to the technical solutions provided by the examples of the present disclosure, the visiting data of the objects making their visit within the preset time range is obtained; the ratio parameter based on the visiting data of the first type of objects and the visiting data of the second type of objects is determined; the resource allocation scheme for at least a part of the objects is adjusted based on the ratio parameter and the basic data of the objects; and the resource allocation is performed in accordance with the adjusted

resource allocation scheme. In this way, the time spent in processing data can be saved, that is, the time-consuming and labor-intensive problem caused by manual data processing is solved. In addition, the resource allocation scheme for at least the part of the objects is adjusted based on the basic data of the objects and the ratio parameter determined based on the visiting data of the first type of objects and the visiting data of the second type of objects within the preset time range, which ensures a reasonable allocation of limited resources. Also, the resources are allocated in accordance with the adjusted resource allocation scheme, which can further improve customer experience and sales conversion rate.

[0059] In order to master the visiting data better, before obtaining the visiting data of the objects making their visit within the preset time range in some examples, it also includes: acquiring an image in real time; performing an image recognition on the image to obtain one or more image recognition results; matching each image recognition result in a database when the image recognition result includes a human-face feature and/or a human-body feature; when an image template in the database is matched, updating a historical visiting record and the basic data stored in association with the image template; and when no image template in the database is matched, adding the image recognition result as the image template of a corresponding object, and storing the image template in association with collected basic data of the corresponding object and a newly-added historical visiting record.

[0060] In the examples of the present disclosure, various means may be adopted to acquire the image in real time. For example, it may receive the image sent by an image collector, or it may receive the image transmitted by another device through a communicator.

[0061] In some examples, the image recognition may be performed on the acquired image via a human-face recognition technology to obtain one or more human-face feature recognition results of the image. And/or, the image recognition may be performed on the acquired image via a human-body recognition technology to obtain one or more human-body feature recognition results of the image. The present disclosure does not specifically limit the human-face recognition technology or the human-body recognition technology.

[0062] In some examples, when an image recognition result obtained through performing the image recognition on the acquired image includes the human-face feature and/or the

human-body feature, the matching of the image recognition result is performed in the database. When an image template in the database is matched, the historical visiting record and the basic data which are stored in association with the image template are updated.

[0063] The basic data and the historical visit record, in whole or in part, may be stored in a form of tag information. Thus, in response to the existence of an image template matching the object in the database, the label information corresponding to the matched image template may be determined. The label information includes information for indicating whether it is the first visit and indicating the number of visits. The image template includes but is not limited to the human-body template or the human-face template. The database includes but is not limited to a human-body template library or a human-face template library.

[0064] It should be noted that the historical visit record of an object is stored in the database. The historical visit record includes at least identification (ID) information and visiting time information which are stored in association with the image template. Each object is allocated with one identification and only one identification is allocated to the same object. In this way, by determining whether there is the object identification information matching the image recognition result, it can be determined whether the current object is making the first visit or making the non-first visit.

[0065] In one or more examples of the above solutions, when no image template is matched, the method further includes: adding the image recognition result as the image template of the corresponding object, and storing the image template in association with the collected basic data of the corresponding object and the newly-added historical visit record. In response to the absence of any image template matching the object in the database, an image template of the corresponding object may be created in the database and the label information may be allocated to the object. The label information includes information for indicating the first visit. In this way, when there is no matched image template, the image recognition result of the object is added into the database as the corresponding image template, which can supplement the database and facilitate subsequent queries when the object makes his visit again.

[0066] In some examples, adjusting the resource allocation scheme for at least the part of the objects based on the ratio parameter and the basic data of the objects includes: determining target resource allocation schemes that match a preset condition; and adjusting, based on the ratio parameter and the target resource allocation schemes, the

resource allocation scheme for at least the part of the objects. The basic data of at least the part of the objects meets the preset condition.

[0067] In some examples, the target resource allocation schemes may be obtained based on the historical allocation status corresponding to the same type of basic data, so as to adjust the resource allocation scheme for at least the part of the objects. In this way, the resource allocation scheme for at least the part of the objects can be adjusted more pertinently in view of the historical data, so as to allocate resources to at least the part of the objects in accordance to the adjusted resource allocation scheme, thereby helping to improve the customer experience and the sales conversion rate of at least the part of objects.

[0068] In order to better allocate the limited resources reasonably, in some examples, adjusting, based on the ratio parameter and the target resource allocation schemes, the resource allocation scheme for at least the part of the objects includes:

[0069] in a case where the ratio parameter indicates that the visiting data of the second type of objects meets a first preset condition, determining a resource allocation scheme for the second type of objects among the target resource allocation schemes; and/or, in a case where the ratio parameter indicates that the visiting data of the first type of objects meets a second preset condition, determining a resource allocation scheme for the first type of objects among the target resource allocation schemes.

[0070] In the examples of the present disclosure, the first preset condition is used to characterize a change of the visiting data of the second type of objects. For example, the first preset condition is used to characterize an increase or an increasing trend in numbers, or characterize a decrease or a decreasing trend in numbers, or characterize a relatively stable change, or characterize no change, i.e., an unchanged trend. The second preset condition is used to characterize a change of the visiting data of the first type of objects. For example, the second preset condition is used to characterize an increase or an increasing trend in numbers, or characterize a decrease or a decreasing trend in numbers, or characterize a relatively stable change, or characterize no change, i.e., an unchanged trend.

[0071] It should be noted that the first preset condition and the second preset condition will be different when the first type of objects and the second type of objects refer to different objects.

[0072] As an example, in a case where the first type of objects refer to the new customers and the second type of objects refer to the regular customers, the first preset condition is used to characterize the change of the visiting data of the regular customers and the second preset condition is used to characterize the change of the visiting data of the new customers.

[0073] As another example, in a case where the first type of objects refer to the objects that have the cumulative visiting duration less than the first time threshold till the preset time point and the second type of objects refer to the objects that have the cumulative visiting duration greater than or equal to the second time threshold till the preset time point, the first preset condition is used to characterize the change in numbers of the objects that have the cumulative visiting duration greater than or equal to the second time threshold and the second preset condition is used to characterize the change in numbers of the objects that have the cumulative visiting duration less than the first time threshold.

[0074] As another example, in a case where the first type of objects refer to the objects that make the first visit and have the cumulative visiting duration less than the first time threshold till the preset time point and the second type of objects refer to the objects that make the non-first visit and have the cumulative visiting duration greater than or equal to the second time threshold till the preset time point, the first preset condition is used to characterize the change in numbers of the objects that make the non-first visit and have the cumulative visiting duration greater than or equal to the second time threshold and the second preset condition is used to characterize the change in numbers of the objects that make the first visit and have the cumulative visiting duration less than the first time threshold.

[0075] In some examples, resources include online resources and/or offline resources. The online resources include website-based service resources, and the offline resources include physical store-based service resources.

[0076] That the resource allocation scheme is adjusted in step 103 includes: adjusting online resource configuration data and/or offline resource configuration data.

[0077] In the examples of the present disclosure, the contents of the online resource configuration data include at least one item of selling price, after-sales service, or pushing mode of resource configuration data. The pushing mode of resource configuration data includes at least one item of pushing time of resource configuration data, pushing interval between two adjacent resource configuration data pushes, or pushing path of resource

configuration data. For example, the online resource configuration data may include one or any combination of the following contents: a product presentation position in a web page, presentation time, content of an advertisement push, and by a TV broadcast. Of course, it can also include more or less contents than the above-mentioned examples, and the specific contents of the online resource configuration data are not limited here. According to different scenarios and requirements, identical or different online resource configure data may be selected.

[0078] In the examples of the present disclosure, the contents of the offline resource configuration data include at least one of assistant or follow-up staff, selling price, after-sales service, or pushing mode of resource configuration data. The pushing mode of resource configuration data includes at least one item of pushing time of resource configuration data, pushing interval between two adjacent resource configuration data pushes, or pushing path of resource configuration data. For example, the offline resource configuration data may include one or any combination of the following contents: assistant staff in a physical store, a billboard position in a physical store, a product position in a physical store, and frequency and time of displaying objects on a display screen in a physical store. Of course, it can also include more or less contents than the above-mentioned examples, and the specific contents of the offline resource configuration data is not limited here. According to different scenarios and requirements, identical or different offline resource configure data may be selected.

[0079] In this way, by adjusting the online resource allocation data and/or the offline resource allocation data, it facilitates the limited resources to be allocated and utilized more reasonably, thereby improving the customer experience and the sales conversion rate.

[0080] As an example, if the visitor number of the new customers decreases or shows a decreasing trend within the preset time range, the online resource allocation data and/or the offline resource allocation data are adjusted. For example, adjusting the contents of the online resource allocation data includes: lowering the selling price of products, extending warranty periods, adding auxiliary gifts, increasing cash back, and increasing a frequency of pushing messages. For example, adjusting the contents of the offline resource allocation data includes: increasing cash back for the regular customers who have recommended one or more new customers, lowering the selling price of products, extending warranty periods, increasing gifts, and increasing a frequency of pushing messages.

[0081] As another example, if the visitor number of the regular customers decreases or shows a decreasing trend within the preset time range, the online resource allocation data and/or the offline resource allocation data are adjusted. For example, adjusting the contents of the online resource allocation data includes: lowering the selling price of products, extending warranty periods, adding auxiliary gifts, increasing cash back, and increasing a frequency of pushing messages. For example, adjusting the contents of the offline resource allocation data includes: changing the follow-up staff, lowering the selling price of products, extending warranty periods, adding auxiliary gifts, increasing cash back, and increasing a frequency of pushing messages.

[0082] In order to facilitate a unified management of resources, the consumers of the same group may be allocated with the same type of resources, such as the same seller and a marketing strategy formulated in accordance with the attributes of the consumer group. In some examples, step 103 includes: determining the consumer group based on the basic data; and determining the same resource allocation scheme for the objects belonging to the same consumer group. Determining the same resource allocation scheme for the objects belonging to the same consumer group includes: determining the attributes of the consumer group based on the basic data; and formulating the resource allocation data plan in accordance with the attributes of the consumer group. In the examples of the present disclosure, the consumer group is a group that can be characterized with the corresponding attributes of its objects. For example, the group is characterized by gender, age, career, geographic location, and the like.

[0083] In some examples, formulating the resource configuration data plan includes: matching, moving and reorganizing the resource configuration data in quantity, time and space. In this way, a reasonable adjustment scheme for the resource configuration data can be given in accordance with the attributes of the consumer group to which the objects belong, which is conducive to targeted work and services in accordance with the adjusted resource configuration data scheme. It also means that, by locking the core factors affecting sales volume based on a result of processing the attributes of the consumer groups, the resource allocation scheme aimed at a target product can be reasonably planned to further improve the customer experience and the sales conversion rate.

[0084] Considering that the change trend may reflect a rationality or validity of the resource configuration data more effectively, in one implementation, an evaluation result of the current resource configuration data may be determined based on the change trend.

Specifically, in some examples, the step 103 further includes: evaluating the resource configuration data based on the ratio parameter to obtain the evaluation result of the resource configuration data; and adjusting the resource allocation scheme in accordance with the evaluation result.

[0085] In the examples of the present disclosure, the resource configuration data may relate to target product sales activity. For example, the corresponding data reflects the various resources in the resource allocation scheme adopted aiming at the target product. The resource configuration data includes but is not limited to one or any combination of the items: quantity configuration, time configuration, space configuration, staff configuration and information network configuration.

[0086] In the examples of the present disclosure, the evaluation result may be used to reflect an impact of performing the current resource allocation for a period of time. The evaluation result includes at least two levels, with different levels corresponding to different types of resource configuration data to be adjusted and/or different schemes of adjusting the resource configuration data. In this way, by giving the evaluation result of the resource allocation data, it is helpful to subsequently provide the scheme for adjusting the resource allocation data based on the evaluation result, thereby facilitating the staff to provide targeted work and services in accordance with the adjusted scheme to increase customer traffic.

[0087] In some examples, adjusting the resource allocation scheme based on the evaluation result includes: in a case where the evaluation result is a first evaluation result which characterizes a decreasing trend of the first type of objects, the contents of the resource configuration data is adjusted to increase the visitor number of the first type of objects. The resource configuration data includes the online resource configuration data and/or the offline resource configuration data. In this way, it facilitates the staff to provide targeted work and services in accordance with the adjusted resource allocation data scheme, thereby increasing the visitor number of the first type of objects. Similarly, in a case where the evaluation result is a second evaluation result which characterizes a decreasing trend of the second type of objects, the contents of the resource configuration data is adjusted to increase the visitor number of the second type of objects. The resource configuration data includes the online resource configuration data and/or the offline resource configuration data. In this way, it facilitates the staff to provide targeted work and

services in accordance with the adjusted resource allocation data scheme, thereby increasing the visitor number of the second type of objects.

[0088] According to the technical solutions provided by the examples of the present disclosure, since the ratio parameter can effectively reflect whether the resource configuration data aiming at the target product is reasonable or not, the evaluation result is more targeted, that is, the analysis of the resource configuration data is performed only aiming at the target product. In this way, the evaluation result of the resource configuration data aiming at the target product can be obtained based on the obtained ratio parameter, so that the resource configuration data aiming at the target product, i.e., the resource configuration situation, can be reasonably adjusted based on the evaluation result. Therefore, by locking the core factors affecting the traffic based on the data processing result, the resource allocation data aiming at the target product can be reasonably planned to further improve the customer experience and the sales conversion rate.

[0089] In order to achieve an efficient management on the staff responsible for customer follow-up in the store, in some examples, the method further includes: when the image template is matched and the tag information indicates that the object makes the non-first visit, determining identification information of the assistant associated with the object; sending the tag information of the object and the identification information of the assistant to an electronic device, so that the tag information of the object and the identification information of the assistant are displayed on the electronic device.

[0090] In this way, it can quickly make an accurate judgment about being the new customer or the regular customer, which improves the accuracy of identifying the object as the new or regular customer, thereby assisting the store in detecting high-value customers. In addition, it is error-prone when a receptionist in the store assigns an assistant (who is regarded, only from memory, to have previously provided a service for a regular customer in his previous visit) to the regular customer. By performing a feature analysis on the acquired image to determine the previous assistant assigned to the regular customer in the present disclosure, it facilitates improving an accuracy rate and standardizing a sales reception procedure.

[0091] In order to achieve an efficient management on the staff responsible for customer follow-up in the store, in some examples, the method further includes: when the tag information indicates that the object makes the first visit, obtaining the identification information of the assistant assigned to the object; and establishing and storing an

association relationship between the identification information of the object and the identification information of the assistant.

[0092] In this way, by establishing the association relationship between the identification information of the object and the identification information of the assistant, the assistant who serviced the object last time can be quickly determined when the object make his visit again, thereby keeping the same assistant follow-up and serve the object at every visit of the object.

[0093] As an implementation, obtaining the identification information of the assistant assigned to the object may include: receiving the identification information of the assistant assigned to the object sent by a terminal. In this way, an assistant can be assigned to the object who makes the first visit according to the assignment information inputted by a manager on the terminal side.

[0094] As an implementation, obtaining the identification information of the assistant assigned to the object may include: assigning the identification information of the assistant to the object based on the number of online terminals and/or the working statuses reported by the online terminals. In this way, it can quickly achieve an assignment according to the number of online terminals and/or the working statuses reported by the online terminals, thereby reasonably assigning the assistant to the object.

[0095] In some examples, the above methods may be performed by a server. The server may be a cloud server and/or a front-end server. For example, the above methods are implemented by the front-end server (such as a video integrated machine) and the cloud server. The front-end server performs human-face and human-body tracking on the acquired image to obtain human-face and human-body tracking results, and determines, based on the quality of the human-face image and/or the human-body image, which of the image information is taken as a basis for recognition, and then sends the determined image information to the cloud server. After receiving the image information sent by the front-end server, the cloud server queries the received image information in the corresponding database, obtains a recognition result, and sends the corresponding various processing results to the terminal, such as the tag information of the object, the identification information of the assistant, the evaluation result of the resource configuration data, and the adjustment scheme of the resource configuration data, which, however, are not limited by the examples of the present disclosure.

[0096] In the examples of the present application, on the basis of implementing any one of the above-mentioned methods, as illustrated in FIG. 2, the method may further include the following steps.

[0097] At step 201, tag information of an object, as well as identification information of an assistant associated with the object once the tag information indicates that the object makes a non-first visit, is received.

[0098] At step 202, the tag information of the object and the identification information of the assistant are displayed.

[0099] In this way, the tag information of the object and the identification information of the assistant interfaced with the object can be provided, which facilitates a terminal user to learn the tag information of the current object in time and to assign the assistant according to the tag information, thereby further improving customer experience and sales conversion rate.

[0100] In some examples, the method further includes: in a case where the tag information indicates that the object makes the first visit, obtaining and displaying the identification information of the assistant assigned to the object; and, sending the identification information of the assistant assigned to the object to a server.

[0101] As an example, in the case where the tag information indicates that the object makes the first visit, the terminal obtains the identification information of the assistant assigned to the object, and displays the identification information of the assistant. The way that the terminal obtains the identification information is, for example, manual input by the terminal user or automatic assignment by the server. In this way, it can achieve a rapid assignment of a reception task, which facilitates the staff to provide targeted work and services according to the assignment information, thereby improving work efficiency.

[0102] In some examples, the method further includes: displaying the tag information of the object and the identification information of the assistant in an object notification interface. In this way, it facilitates the terminal user to learn the information of the object and the assistant in time through the object notification interface.

[0103] In some examples, the method further includes: obtaining a query condition which is inputted and includes at least a preset time range; and sending the query condition to the server. In this way, the terminal can be provided with the tag information of one or more objects and the identification information of one or more assistants which meet the query condition, thereby helping to realize the rapid assignment of the reception task,

which facilitates the staff to provide targeted work and services according to the assignment information and improves customer experience and sales conversion rate.

[0104] FIG. 3 is a schematic diagram of an object notification interface outputted at a terminal side according to the examples of the present disclosure. As illustrated in FIG. 3, the tag information of each object is displayed on the object notification interface, such as the first visit or the Nth visit, where N is a positive integer greater than or equal to 2. The identification of the assistant responsible for interfacing with each object, such as the name or employee number of the assistant, is also displayed on the object notification interface. Of course, information such as whether each object has decision-making power may also be displayed on the object notification interface.

[0105] Through the object notification interface, the receptionist and the sales staff in the store can learn who is responsible for follow-up of a certain object, and the receptionist in the store can recommend corresponding assistants for the objects who have different information displayed in the object notification interface, which facilitates standardizing the sales reception procedure.

[0106] It should be understood that the object notification interface illustrated in FIG. 3 is an alternative or additional specific implementation. Those skilled in the art can make various obvious changes and/or substitutions based on the example in FIG. 3, and the obtained technical solutions still belong to the disclosure scope of the examples of the present disclosure.

[0107] FIG. 4 is a schematic diagram of a statistic display interface according to examples of the present disclosure. As illustrated in FIG. 4, the display interface shows a rank of the most popular cars in the store, as well as other statistic such as a real-time traffic, a proportion of new/regular customers, an age distribution, and a gender distribution. Through this display interface, 4S store salespersons and the stores can find out the attention degree of the objects aiming at each car. Combined with promoting requirements and marketing strategies of cars in the store, it can provide data support for placing the cars in the 4S store and feeding back the effect of marketing activities. Especially, without leaving their house, regional companies, retailers and factories can remotely learn the attention degree of various object groups in different stores aiming at each car, so as to provide supports for operating decisions and evaluating the work effect of salespersons/stores.

[0108] It should be understood that the display interface illustrated in FIG. 4 is an alternative or additional specific implementation. Those skilled in the art can make various obvious changes and/or substitutions based on the example in FIG. 4, and the obtained technical solutions still belong to the disclosure scope of the examples of the present disclosure.

[0109] Corresponding to the foregoing resource allocation methods, the examples of the present disclosure provide a resource allocation apparatus which is applicable to an electronic device. As illustrated in FIG. 5, the apparatus includes:

[0110] an obtaining module 10 that is configured to obtain visiting data of objects making their visit within a preset time range;

[0111] a determining module 20 that is configured to determine a ratio parameter based on the visiting data of a first type of objects and the visiting data of a second type of objects; and

[0112] an allocating module 30 that is configured to adjust, based on the ratio parameter and basic data of the objects, a resource allocation scheme for at least a part of the objects and perform a resource allocation in accordance with the adjusted resource allocation scheme.

[0113] In one or more examples of the above solution, the determining module 20 may be configured to determine the first type of objects and the second type of objects among the objects making their visit within the preset time range. For example, the first type of object has a cumulative visiting duration less than a first time threshold till a preset time point and/or makes a first visit. The second type of object has the cumulative visiting duration greater than or equal to a second time threshold till the preset time point and/or makes a non-first visit. The first time threshold may be less than, equal to, or greater than the second time threshold.

[0114] As an implementation, the obtaining module 10 is configured to acquire an image in real time; perform an image recognition on the image to obtain one or more image recognition results; match each image recognition result in a database in response to determining that the image recognition result includes a human-face feature and/or a human-body feature; in response to determining that an image template in the database is matched, update a historical visiting record and the basic data stored in association with the image template; and in response to determining that no image template in the database is matched, add the image recognition result as the image template of a corresponding

object, and store the image template in association with collected basic data of the corresponding object and a newly-added historical visiting record. Further, the obtaining module 10 may associatively store the historical visiting record and the basic data in a form of tag information.

[0115] As an implementation, the allocating module 30 is configured to determine target resource allocation schemes that match a preset condition; and adjust, based on the ratio parameter and the target resource allocation schemes, the resource allocation scheme for at least the part of the objects. The basic data of at least the part of the objects meets the preset condition.

[0116] As an implementation, the allocating module 30 is configured to in a case where the ratio parameter indicates that the visiting data of the second type of objects meets a first preset condition, determine a resource allocation scheme for the second type of objects among the target resource allocation schemes; and/or, in a case where the ratio parameter indicates that the visiting data of the first type of objects meets a second preset condition, determine a resource allocation scheme for the first type of objects among the target resource allocation schemes.

[0117] In one or more examples, the visiting data includes a visitor number, and the ratio parameter includes at least one item of: a ratio of the visitor number of the first type of objects to the visitor number of the second type of objects, a ratio of the visitor number of the second type of objects to the visitor number of the first type of objects, a ratio of the visitor number of the first type of objects to a target visitor number, or a ratio of the visitor number of the second type of objects to the target visitor number. The target visitor number includes a sum of the visitor number of the first type of objects and the visitor number of the second type of objects, or includes a total visitor number within the preset time range.

[0118] As an implementation, the resources include online resources and/or offline resources. The online resources include website-based service resources, and the offline resources include physical store-based service resources. The allocating module 30 is configured to adjust online resource configuration data and/or offline resource configuration data.

[0119] In one or more examples of the above solutions, the online resource configuration data includes at least one item of selling price, after-sales service, or pushing mode of resource configuration data. The offline resource configuration data includes at least one

item of assistant or follow-up staff, selling price, after-sales service, or pushing mode of resource configuration data. The pushing mode of resource configuration data includes at least one item of pushing time of resource configuration data, pushing interval between two adjacent resource configuration data pushes, or pushing path of resource configuration data.

[0120] In some examples, the apparatus further includes: a communicating module 40 (not illustrated in FIG. 5) that is configured to send tag information of the object and the identification information of the assistant to a terminal, so that the terminal displays the tag information of the object and the identification information of the assistant.

[0121] Those skilled in the art should understand that, in some alternative or additional examples, various processing modules in the resource allocation apparatus illustrated in FIG. 5 may be set in a server, and their feasible functions may be understood with reference to the relevant description of the foregoing resource allocation methods and may be realized by a program running on one or more processors or by a specific logic circuit.

[0122] In practical applications, the specific structures of the obtaining module 10, the determining module 20, the allocating module 30 and the communicating module 40 may correspond to the one or more processors. The specific structure of the processor may be an electronic component or a set of electronic components having a processing function, such as a Central Processing Unit (CPU), a Micro Controller Unit (MCU), a Digital Signal Processor (DSP), or a Programmable Logic Controller (PLC). The processor includes executable codes stored in a storage medium. The processor may be coupled to the storage medium through a communication interface such as a bus. The processor reads the executable codes from the storage medium and run to perform a specific corresponding function of each unit. The part of the storage medium for storing the executable codes is preferably a non-transitory storage medium.

[0123] The resource allocation apparatuses provided by the examples of the present disclosure can save the time spent in processing data, that is, the time-consuming and labor-intensive problem caused by manual data processing is solved. In addition, the resource allocation scheme for at least the part of the objects is adjusted based on the basic data of the objects and the ratio parameter determined by the visiting data of the first type of objects and the visiting data of the second type of objects within the preset time range, which ensures a reasonable allocation of limited resources.

[0124] The examples of the present disclosure also describe a resource allocation device. The device includes a memory, one or more processors, and a computer program stored in the memory and running on the one or more processors. The one or more processors implement the resource allocation method provided by any one of the foregoing technical solutions when executing the computer program.

[0125] As an implementation, when executing the computer program, the one or more processors perform: obtaining visiting data of objects making their visit within a preset time range; determining a ratio parameter based on the visiting data of a first type of objects and the visiting data of a second type of objects; adjusting, based on the ratio parameter and basic data of the objects, a resource allocation scheme for at least a part of the objects; and performing a resource allocation in accordance with the adjusted resource allocation scheme.

[0126] As an implementation, when executing the computer program, the one or more processors perform: determining the first type of objects among the objects that make their visit within the preset time range, where the object that has a cumulative visiting duration less than a first time threshold till a preset time point and/or makes a first visit is determined as the first type of object; and determining the second type of objects among the objects that make their visit within the preset time range, where the object that has the cumulative visiting duration greater than or equal to a second time threshold till the preset time point and/or makes a non-first visit is determined as the second type of object. The first time threshold may be less than, equal to, or greater than the second time threshold.

[0127] As an implementation, when executing the computer program, the one or more processors perform: acquiring an image in real time; performing an image recognition on the image to obtain one or more image recognition results; matching each image recognition result in a database in response to determining that the image recognition result includes a human-face feature and/or a human-body feature; in response to determining that an image template in the database is matched, updating a historical visiting record and the basic data stored in association with the image template; and in response to determining that no image template in the database is matched, adding the image recognition result as the image template of a corresponding object, and storing the image template in association with collected basic data of the corresponding object and a newly-added historical visiting record.

[0128] As an implementation, when executing the computer program, the one or more processors perform: associatively storing the historical visiting record and the basic data in a form of tag information.

[0129] As an implementation, when executing the computer program, the one or more processors perform: determining target resource allocation schemes that match a preset condition; and adjusting, based on the ratio parameter and the target resource allocation schemes, the resource allocation scheme for at least the part of the objects. The basic data of at least the part of the objects meets the preset condition.

[0130] As an implementation, when executing the computer program, the one or more processors perform: in a case where the ratio parameter indicates that the visiting data of the second type of objects meets a first preset condition, determining a resource allocation scheme for the second type of objects among the target resource allocation schemes; and/or, in a case where the ratio parameter indicates that the visiting data of the first type of objects meets a second preset condition, determining a resource allocation scheme for the first type of objects among the target resource allocation schemes.

[0131] In one or more examples of the above solutions, the visiting data includes a visitor number, and the ratio parameter includes at least one item of: a ratio of the visitor number of the first type of objects to the visitor number of the second type of objects, a ratio of the visitor number of the second type of objects to the visitor number of the first type of objects, a ratio of the visitor number of the first type of objects to a target visitor number, or a ratio of the visitor number of the second type of objects to the target visitor number. The target visitor number includes a sum of the visitor number of the first type of objects and the visitor number of the second type of objects, or includes a total visitor number within the preset time range.

[0132] As an implementation, when executing the computer program, the one or more processors perform: adjusting online resource configuration data and/or offline resource configuration data. The online resources include website-based service resources, and the offline resources include physical store-based service resources.

[0133] As an implementation, when executing the computer program, the one or more processors implement that: the online resource configuration data includes at least one item of selling price, after-sales service, or pushing mode of resource configuration data; and the offline resource configuration data includes at least one item of assistant or follow-up staff, selling price, after-sales service, or pushing mode of resource

configuration data. The pushing mode of resource configuration data includes at least one item of pushing time of resource configuration data, pushing interval between two adjacent resource configuration data pushes, or pushing path of resource configuration data.

[0134] Through the resource allocation devices provided by the examples of the present disclosure, the time spent in processing data can be saved, that is, the time-consuming and labor-intensive problem caused by manual data processing is solved. In addition, the resource allocation scheme for at least the part of the objects is adjusted based on the basic data and the ratio parameter determined by the visiting data of the first type of objects and the visiting data of the second type of objects within the preset time range, which ensures a reasonable allocation of limited resources

[0135] Based on the apparatuses illustrated in FIG. 5, as illustrated in FIG. 6, the apparatus may further include: a receiving module 50 that is configured to receive tag information of an object, as well as identification information of an assistant associated with the object once the tag information indicates that the object makes a non-first visit; and a displaying treatment module 60 that is configured to display the tag information of the object and the identification information of the assistant.

[0136] In one or more examples of the above solution, the apparatus further includes: an acquiring module 70 (not illustrated in FIG. 6) that is configured to obtain and display the identification information of the assistant assigned to the object when the tag information indicates that the object makes a first visit; and a sending treatment module 80 (not illustrated in FIG. 6) is configured to send the identification information of the assistant assigned to the object to a server.

[0137] As an implementation, the displaying treatment module 60 is configured to display the tag information of each object and the identification information of the corresponding assistant in an object notification interface.

[0138] Those skilled in the art should understand that, in one or more alternative or additional examples, various processing modules in the resource allocation apparatus illustrated in FIG. 6 may be set in a terminal such as a personal computer, a mobile phone, a tablet computer, or a wearable device, etc., and their feasible functions can be understood with reference to the relevant description of the aforementioned resource allocation methods. Those skilled in the art should understand that the functions of various processing units in the resource allocation apparatus illustrated in FIG. 6 may be

implemented by a program running on one or more processors or by a specific logic circuit.

[0139] In actual applications, the specific structures of the receiving module 50, the displaying treatment module 60, the acquiring module 70, and the sending treatment module 80 may correspond to the one or more processors. The specific structure of the processor may be an electronic component or a set of electronic components having a processing function, such as a CPU, an MCU, a DSP, or a PLC. The processor includes executable codes stored in a storage medium. The processor may be coupled to the storage medium through a communication interface such as a bus. The processor reads the executable codes from the storage medium and run to perform a specific corresponding function of each unit. The part of the storage medium for storing the executable codes is preferably a non-transitory storage medium.

[0140] Through the resource allocation apparatuses according to the examples of the present disclosure, it facilitates a terminal user to in time learn the tag information of the current object who makes his visit and to assign the assistant according to the tag information, thereby further improving customer experience and sales conversion rate.

[0141] The examples of the present disclosure also describe a resource allocation device. The device includes a memory, one or more processors, and a computer program stored in the memory and running on the one or more processors. The one or more processors implement the resource allocation method provided by any one of the foregoing technical solutions when executing the computer program.

[0142] As an implementation, when executing the computer program, the one or more processors perform: receiving the tag information of an object, as well as the identification information of the assistant associated with the object once the tag information indicates that the object makes a non-first visit; and displaying the tag information of the object and the identification information of the assistant.

[0143] As an implementation, when executing the computer program, the one or more processors perform: in a case where the tag information indicates that the object makes a first visit, obtaining and displaying the identification information of the assistant assigned to the object; and, sending the identification information of the assistant assigned to the object to a server.

[0144] As an implementation, when executing the computer program, the one or more processors perform: displaying the tag information of the object and the identification information of the assistant in an object notification interface.

[0145] Through the resource allocation devices provided by the examples of the present disclosure, it facilitates a terminal user to in time learn the tag information of the current object who makes his visit, and facilitates assigning the assistant according to the tag information, so as to further improve customer experience and sales conversion rate.

[0146] The examples of the present disclosure also describe a computer storage medium in which computer-executable instructions are stored, and the computer-executable instructions are configured to execute the resource allocation method according to each of the foregoing examples. In other words, after the computer-executable instructions are executed by one or more processors, the resource allocation method provided by any one of the foregoing technical solutions can be implemented.

[0147] Those skilled in the art should understand that the functions of the programs in the computer storage medium of this example can be understood with reference to the relevant description of the resource allocation methods applicable to an electronic device in the foregoing examples.

[0148] The examples of the present disclosure also describe a computer program, including computer executable codes. When the computer executable codes run on a device, one or more processors in the device can implement the resource allocation method provided by any one of the foregoing technical solutions.

[0149] It should also be understood that the various alternative or additional examples listed in the present disclosure are only illustrated to help those skilled in the art to better understand the technical solutions of the examples of the present disclosure, and should not be construed as a limit to the examples of the present disclosure. Those skilled in the art can make various changes and substitutions on the basis of the various alternative or additional examples described herein, which should also be understood as a part of the examples of the present disclosure.

[0150] In addition, the description of the technical solutions here focuses on emphasizing the differences between the various examples. For the sake of brevity, the identical or similar parts, which can be referred to each other, will not be repeated.

[0151] In addition to various examples provided by the present disclosure, it should be understood that the disclosed apparatuses and methods may be implemented in other ways.

The apparatus examples described above are merely schematic, for example, the division of the units is merely a logical function division. There may be another division manner in actual implementation, for example, a plurality of units or components may be combined, or may be integrated into another system, or some features may be ignored or not performed. Moreover, the coupling, or direct coupling, or communication connection between the components illustrated or discussed may be implemented through some interfaces. Indirect coupling or communication connection of devices or units may be electrical, mechanical, or in other forms.

[0152] The units described as separate components may or may not be physically separate, and the components displayed as units may or may not be physical units. They may be located in one place or distributed to a plurality of network units. Some or all of the units may be selected according to actual needs to achieve the purpose of the examples of the present disclosure.

[0153] In addition, all the functional units in the examples of the present disclosure may be integrated into one processing unit, or each functional unit separately serves as one unit, or two or more functional units may be integrated into one unit. The integrated units may be implemented in the form of hardware or in the form of hardware together with software function units.

[0154] Those skilled in the art may understand that all or a part of the steps of the foregoing method examples may be implemented by hardware relevant to program instructions. The foregoing programs may be stored in a computer readable storage medium. When the programs are executed, the steps of the foregoing method examples are executed. The foregoing storage medium includes a medium that can store program codes, such as a removable storage device, a read-only memory (ROM), a random access memory (RAM), a magnetic disk, or an optical disk.

[0155] Alternatively, if the above integrated unit in the present disclosure is implemented in the form of a software function module and sold or used as an independent product, the integrated unit may also be stored in a computer readable storage medium. Based on such understanding, the technical solutions provided by the examples of the present disclosure in nature or a part thereof that make a contribution to the related art may be embodied in the form of a software product. The computer software product is stored in a storage medium and includes several instructions to enable a computer device (which may be a personal computer, a server, or a network device, etc.) to perform all or a part of the

method described in various examples of the present disclosure. The foregoing storage medium includes a medium that can store program codes, such as a removable storage device, an ROM, an RAM, a magnetic disk, or an optical disk.

CLAIMS

1. A resource allocation method, comprising:
 - obtaining visiting data of objects making their visit within a preset time range;
 - determining a ratio parameter based on the visiting data of a first type of objects and the visiting data of a second type of objects;
 - adjusting, based on the ratio parameter and basic data of the objects, a resource allocation scheme for at least a part of the objects; and
 - performing a resource allocation in accordance with the adjusted resource allocation scheme.
2. The method according to claim 1, further comprising:
 - determining the first type of objects among the objects, wherein the object that has a cumulative visiting duration less than a first time threshold till a preset time point and/or makes a first visit is determined as the first type of object; and
 - determining the second type of objects among the objects, wherein the object that has the cumulative visiting duration greater than or equal to a second time threshold till the preset time point and/or makes a non-first visit is determined as the second type of object.
3. The method according to claim 1 or 2,
 - wherein the visiting data comprises a visitor number, and
 - wherein the ratio parameter comprises at least one item of:
 - a ratio of the visitor number of the first type of objects to the visitor number of the second type of objects,
 - a ratio of the visitor number of the second type of objects to the visitor number of the first type of objects,
 - a ratio of the visitor number of the first type of objects to a target visitor number,or
 - a ratio of the visitor number of the second type of objects to the target visitor number,
 - wherein the target visitor number comprises a sum of the visitor number of the first type of objects and the visitor number of the second type of objects, or comprises a total visitor number within the preset time range.
4. The method according to any one of claims 1 to 3, before obtaining the visiting data of the objects making their visit within the preset time range, further comprising:
 - acquiring an image in real time

performing an image recognition on the image to obtain one or more image recognition results;

matching each image recognition result in a database in response to determining that the image recognition result comprises a human-face feature and/or a human-body feature;

in response to determining that an image template in the database is matched, updating a historical visiting record and the basic data stored in association with the image template; and

in response to determining that no image template in the database is matched, adding the image recognition result as the image template of a corresponding object, and storing the image template in association with collected basic data of the corresponding object and a newly-added historical visiting record.

5. The method according to claim 4, wherein the historical visiting record and the basic data are associatively stored in a form of tag information.

6. The method according to any one of claims 1 to 5, wherein adjusting, based on the ratio parameter and the basic data of the objects, the resource allocation scheme for at least the part of the objects comprises:

determining target resource allocation schemes that matches a preset condition; and

adjusting, based on the ratio parameter and the target resource allocation schemes, the resource allocation scheme for at least the part of the objects, wherein the basic data of at least the part of the objects meets the preset condition.

7. The method according to claim 6, wherein adjusting, based on the ratio parameter and the target resource allocation schemes, the resource allocation scheme for at least the part of the objects comprises:

in a case where the ratio parameter indicates that the visiting data of the second type of objects meets a first preset condition, determining a resource allocation scheme for the second type of objects among the target resource allocation schemes; and/or

in a case where the ratio parameter indicates that the visiting data of the first type of objects meets a second preset condition, determining a resource allocation scheme for the first type of objects among the target resource allocation schemes.

8. The method according to any one of claims 1 to 7,

wherein resources comprise online resources and/or offline resources, the online resources comprise website-based service resources, and the offline resources comprise physical store-based service resources; and

wherein adjusting the resource allocation scheme comprises:

adjusting online resource configuration data and/or offline resource configuration data.

9. The method according to claim 8, wherein

the online resource configuration data comprises at least one item of selling price, after-sales service, or pushing mode of resource configuration data; and

the offline resource configuration data comprises at least one item of assistant or follow-up staff, selling price, after-sales service, or pushing mode of resource configuration data,

wherein the pushing mode of resource configuration data comprises at least one item of pushing time of resource configuration data, pushing interval between two adjacent resource configuration data pushes, or pushing path of resource configuration data.

10. The method according to claim 8, further comprising:

evaluating the resource configuration data based on the ratio parameter; and

adjusting the resource allocation scheme based on the evaluation result.

11. A resource allocation apparatus, comprising:

an obtaining module, configured to obtain visiting data of objects making their visit within a preset time range;

a determining module, configured to determine a ratio parameter based on the visiting data of a first type of objects and the visiting data of a second type of objects; and

an allocating module, configured to adjust, based on the ratio parameter and basic data of the objects, a resource allocation scheme for at least a part of the objects and perform a resource allocation in accordance with the adjusted resource allocation scheme.

12. The apparatus according to claim 11, wherein the determining module is configured to:

determine the first type of objects among the objects, wherein the object that has a cumulative visiting duration less than a first time threshold till a preset time point and/or makes a first visit is determined as the first type of object; and

determine the second type of objects among the objects, wherein the object that has the cumulative visiting duration greater than or equal to a second time threshold till the preset time point and/or makes a non-first visit is determined as the second type of object.

13. The apparatus according to claim 11 or 12,

wherein the visiting data comprises a visitor number, and

wherein the ratio parameter comprises at least one item of:

a ratio of the visitor number of the first type of objects to the visitor number of the second type of objects,

a ratio of the visitor number of the second type of objects to the visitor number of the first type of objects,

a ratio of the visitor number of the first type of objects to a target visitor number,
or

a ratio of the visitor number of the second type of objects to the target visitor number,

wherein the target visitor number comprises a sum of the visitor number of the first type of objects and the visitor number of the second type of objects, or comprises a total visitor number within the preset time range.

14. The apparatus according to any one of claims 11 to 13, wherein the obtaining module is configured to:

acquire an image in real time

perform an image recognition on the image to obtain one or more image recognition results;

match each image recognition result in a database in response to determining that the image recognition result comprises a human-face feature and/or a human-body feature;

in response to determining that an image template in the database is matched, update a historical visiting record and the basic data stored in association with the image template;
and

in response to determining that no image template in the database is matched, add the image recognition result as the image template of a corresponding object, and store the image template in association with collected basic data of the corresponding object and a newly-added historical visiting record.

15. The apparatus according to claim 14, wherein the obtaining module is configured to associatively store the historical visiting record and the basic data in a form of tag information.

16. The apparatus according to any one of claims 11 to 15, wherein the allocating module is configured to:

determine target resource allocation schemes that match a preset condition; and

adjust, based on the ratio parameter and the target resource allocation schemes, the resource allocation scheme for at least the part of the objects, wherein the basic data of at least the part of the objects meets the preset condition.

17. The apparatus according to claim 16, wherein the allocating module is configured to:

in a case where the ratio parameter indicates that the visiting data of the second type of objects meets a first preset condition, determine a resource allocation scheme for the second type of objects among the target resource allocation schemes; and/or

in a case where the ratio parameter indicates that the visiting data of the first type of objects meets a second preset condition, determine a resource allocation scheme for the first type of objects among the target resource allocation schemes.

18. The apparatus according to any one of claims 11 to 17,

wherein resources comprise online resources and/or offline resources, the online resources comprise website-based service resources, and the offline resources comprise physical store-based service resources; and

wherein the allocating module is configured to:

adjust online resource configuration data and/or offline resource configuration data.

19. The apparatus according to claim 18, wherein

the online resource configuration data comprises at least one item of selling price, after-sales service, or pushing mode of resource configuration data; and

the offline resource configuration data comprises at least one item of assistant or follow-up staff, selling price, after-sales service, or pushing mode of resource configuration data,

wherein the pushing mode of resource configuration data comprises at least one item of pushing time of resource configuration data, pushing interval between two adjacent resource configuration data pushes, or pushing path of resource configuration data.

20. The apparatus according to claim 18, wherein the allocating module is configured to:

evaluate the resource configuration data based on the ratio parameter; and

adjust the resource allocation scheme based on the evaluation result.

21. A resource allocation device, comprising: a memory, one or more processors, and a computer program stored on the memory and running on the one or more processors,

wherein the one or more processors, when executing the computer program, implement the resource allocation method according to any one of claims 1 to 10.

22. A storage medium storing a computer program, wherein the computer program, when being executed by one or more processors, makes the one or more processors perform the resource allocation method according to any one of claims 1 to 10.

23. A computer program comprising computer executable codes, wherein the computer executable codes, when running on a device, make one or more processors in the device perform the resource allocation method according to any one of claims 1-10.