BI-DIRECTIONAL PASSAGE METHOD, BI-DIRECTIONAL PASSAGE EGATE AND STORAGE MEDIUM

TECHNICAL FIELD

The present disclosure generally relates to a passage permission field, and particularly relates to a bi-directional passage method, a bi-directional passage eGate and a storage medium.

BACKGROUND

The known automatic passage eGate has just single passage channel with one-way direction, which cannot be changed in time. Hence, in order to satisfy the demand for the bi-directional passage, the number of the indication modules and verification modules are increased. Although this method can realize the bi-directional passage function, the peripheral device configured for the system are almost doubled, which greatly increases the cost of the product and geometrically increases the maintenance difficulty.

Another way to satisfy the demand for the bi-directional passage is to manually switch the passage direction when the object flow volume between entrance and exit is imbalance , such as changing the entrance to the exit， or changing the exit to the entrance. However, this method requires a personnel to pay attention to the passage condition of the channel in time and perform real-time processing, which increase the work difficulty, and fail to improve the passage efficiency.

Therefore, there is an urgent need for a passage method that can effectively improve the passage efficiency of the eGate without adding manpower or material resources.

SUMMARY

The object of the present disclosure is to provide a bi-directional passage method, a bi-directional passage eGate and a storage medium, which can solve the technical problem of low passage efficiency as mentioned above.

According to a first aspect, a bi-directional passage method, which is applied to a passage channel, is provided, wherein two rotatable verification modules are arranged at intervals along an extension direction of the passage channel, wherein the bi-directional passage method

comprises:

acquiring a passage information of a passage object which is corresponding to the passage channel;

obtaining a passage control instruction according to the passage information;

controlling at least one of the verification modules to rotate according to the passage control instruction, verifying an identity information of the passage object through at least one of the verification modules, controlling a door of the passage channel to open for the passage object which passes the verification, and controlling the door of the passage channel to close for the passage object which fails the verification.

Preferably, the bi-directional passage method is applied to a plurality of the passage channels, and two rotatable verification modules are arranged at intervals in adjacent two passage channels, wherein the bi-directional passage method comprises:

acquiring the passage information of the passage object which is corresponding to each passage channel;

obtaining at least one passage control instruction according to the passage information;

controlling the verification module to verify the identity information of each passage object in turn according to the passage control instruction, controlling the door of the passage channel to open for the passage object which passes the verification, and controlling the door of the passage channel to close for the passage object which fails the verification.

Preferably, obtaining at least one passage control instruction according to the passage information, comprises:

acquiring the passage information of a plurality of passage objects which are corresponding to a same passage channel and/or adjacent passage channels, and determining the passage object with a verification priority among the plurality of passage objects;

obtaining the passage control instruction which is operable to control at least one of the verification modules to rotate and face the passage object with the verification priority.

Preferably, acquiring the passage information of a plurality of passage objects which are corresponding to a same passage channel and/or adjacent passage channels, and determining the passage object with a verification priority among the plurality of passage objects, comprises:

Preferably, acquiring the passage information of a plurality of passage objects which are

corresponding to a same passage channel and/or adjacent passage channels, and determining the passage object with a verification priority among the plurality of passage objects, comprises:

when two ends of the same passage channel have the passage object, giving the passage object, which is corresponding to one end of the passage channel capable of acquiring the passage information preferentially, the verification priority; defining the end of the passage channel which is corresponding to the passage object with the verification priority as an entrance and the other end of the passage channel as an exit; and obtaining the passage control instruction which is operable to drive the verification module to correspond to the passage object with the verification priority;

when same ends of the adjacent passage channels have the passage objects, giving the passage object, which is corresponding to the passage channel capable of acquiring the passage information preferentially, the verification priority; and obtaining the passage control instruction which is operable to drive the verification module to correspond to the passage object with the verification priority;

when the two opposite ends of the adjacent passage channels both have the passage objects, giving the passage objects, at two opposite ends of the adjacent passage channels, the verification priority; and obtaining the passage control instruction which is operable to drive one verification module to correspond to one end of one passage channel and drive the other verification module to correspond to the other end of the other passage channel.

Preferably, acquiring the passage information of a plurality of passage objects which are corresponding to a same passage channel and/or adjacent passage channels, and determining the passage object with a verification priority among the plurality of passage objects, further comprises:

determining one passage object with the verification priority from the plurality of passage objects according to a distance between each passage object and its corresponding verification module, when at least one passage channel of the adjacent passage channels is in a state that the passage object is between the two verification modules; and

obtaining the passage control instruction according to the verification priority.

Preferably, determining one passage object with the verification priority from the plurality of passage objects according to a distance between each passage object and its corresponding

verification module, comprises:

determining one passage object with the verification priority from the adjacent passage channels according to a satisfaction time for each passage object to arrive at a preset distance threshold, when the distance between each passage object and its corresponding verification module satisfies the preset distance threshold.

Preferably, when the satisfaction times of the passage objects which are corresponding to each entrance and exit of the adjacent passage channels are the same, the bi-directional passage method further comprises:

acquiring a transfer information of each passage object respectively, wherein the transfer information at least comprises a transfer time of the passage object;

determining a delay index of each passage object according to a current time and the transfer time of each passage object, wherein the delay index is operable to reflect a probability of a transfer delay of the passage object;

determining the passage object with the verification priority according to a plurality of the delay indexes.

Preferably, determining a delay index of each passage object according to a current time and the transfer time of each passage object, comprises:

determining a remaining transfer time of each passage object according to the current time and the transfer time;

acquiring a number of instantaneous speeds before each passage object enters its corresponding passage channel, and acquiring an acceleration which is corresponding to each instantaneous speed;

obtaining a walkable distance of each passage object in its corresponding remaining transfer time, according to the remaining transfer time which is corresponding to each passage object, the number of instantaneous speeds which are corresponding to each passage object and the acceleration which is corresponding to each instantaneous speed;

obtaining the delay index of each passage object according to the walkable distance, a current speed and the remaining transfer time, which are corresponding to each passage object.

Preferably, the bi-directional passage method further comprises:

recording a verification duration of the passage object with the verification priority, wherein

the verification duration is timed from a rotation of the verification module to a preset verification position;

giving the verification priority to the passage object of another passage channel, if the verification duration exceeds a preset duration threshold and the corresponding verification module fails to acquire the identity information of the passage object, and

giving the verification priority to the passage object of another passage channel, if a verification result of the corresponding verification module on the identity information of the passage object is failed.

Preferably, the bi-directional passage method further comprises:

recording a verification duration of the passage object with the verification priority, wherein the verification duration is timed from a rotation of the verification module to a preset verification position; and

giving the verification priority to the passage object of another passage channel, if the verification duration exceeds a preset duration threshold and the corresponding verification module fails to acquire the identity information of the passage object.

Preferably, the bi-directional passage method further comprises:

giving the verification priority to the passage object of another passage channel, if a verification result of the corresponding verification module on the identity information of the passage object is failed.

According to a second aspect, a bi-directional passage method which is applied to a passage channel is provided, wherein two rotatable verification modules are arranged at intervals along an extension direction of the passage channel, wherein the bi-directional passage method comprises:

acquiring a passage information of a passage object which is corresponding to the passage channel;

acquiring the passage information of the plurality of passage objects which are corresponding to a same passage channel, and determining the passage object with a verification priority among the plurality of passage objects;

obtaining the passage control instruction which is operable to control at least one of the verification modules to rotate and face the passage object with the verification priority;

controlling at least one of the verification modules to rotate according to the passage control instruction, verifying an identity information of the passage object through at least one of the verification modules, controlling a door of the passage channel to open for the passage object which passes the verification, and controlling the door of the passage channel to close for the passage object which fails the verification.

According to a third aspect, a bi-directional passage eGate which applies the above bi-directional passage method, is provided, wherein the bi-directional passage eGate comprises a plurality of eGate bodies which are arranged in parallel, and each eGate body comprises a first body, a second body and two verification modules; wherein the first body and the second body are arranged at intervals and form a passage channel, at least one of the two verification modules is rotatably arranged on the first body, and two adjacent verification modules are arranged at intervals.

According to a fourth aspect, a bi-directional passage eGate which applies the above bi-directional passage method, is provided, wherein the bi-directional passage eGate comprises a plurality of bodies and a plurality of verification modules, wherein the plurality of bodies are arranged in parallel, and two adjacent bodies are arranged at intervals and form a passage channel; wherein at least one verification module is arranged on the body and two adjacent verification modules are arranged at intervals.

According to a fifth aspect, a storage medium, which stores a computer program, is provided, wherein when the computer program is executed by a processor, the processor performs steps shown in any of the bi-directional passage methods.

The embodiments of this disclosure have the following beneficial effects.

In this disclosure, the bi-directional passage method is provided. The bi-directional passage method is applied to a passage channel, wherein two rotatable verification modules are arranged at intervals along an extension direction of the passage channel. The bi-directional passage method comprises： acquiring a passage information of a passage object which is corresponding to the passage channel; obtaining a passage control instruction according to the passage information; controlling at least one of the verification modules to rotate according to the passage control instruction, verifying an identity information of the passage object through at least one of the verification modules, and controlling a door of the passage channel to open for

the passage object which passes the verification and controlling the door of the passage channel to close for the passage object which fails the verification. The bi-directional passage method of this disclosure realizes the identity verification of the passage object of the passage channel by adjusting two rotatable verification modules, thus realizing the bi-directional passage of the passage channel without adding the verification module, and effectively improving the passage efficiency of the passage channel.

BRIEF DESCRIPTION OF THE DRAWINGS

In order to illustrate the technical solution more clearly in the embodiment of the present disclosure, the drawings used in the embodiments or prior arts will be briefly introduced. It is obvious that the drawings in the following description are only some embodiments of this disclosure. For those skilled in the present art, they can also obtain other drawings without paying creative labor according to these drawings.

Fig. 1 is a simplified structure diagram of a bi-directional passage eGate in an embodiment of the present disclosure.

Fig. 2 is another simplified structure diagram of a bi-directional passage eGate in an embodiment of the present disclosure.

Fig.3 is a flow chart of a bi-directional passage method in an embodiment of the present disclosure.

Fig. 4 is a further simplified structure diagram of a bi-directional passage eGate in an embodiment of the present disclosure.

Fig.5 is another flow chart of a bi-directional passage method in an embodiment of the present disclosure.

Fig.6 is a further flow chart of a bi-directional passage method in an embodiment of the present disclosure.

Fig. 7 is another further simplified structure diagram of a bi-directional passage eGate in an embodiment of the present disclosure.

Fig. 8 is a structural block diagram of a computer device in an embodiment of the present disclosure.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

In order to make the object, technical scheme and advantages of this disclosure clearer, this disclosure will be further described in detail in combination with the drawings and the embodiments. It should be understood that the specific embodiments described herein are only operable to explain this disclosure and are not operable to limit this disclosure.

Please refer to Fig. 1, which is a simplified structure diagram of a bi-directional passage eGate in an embodiment of the present disclosure. The bi-directional passage eGate shown in Fig. 1 comprises a plurality of eGate bodies, which are arranged in parallel. Each eGate body comprises a first body 103, a second body 104 and two verification modules (101 and 102). The first body 103 and the second body 104 are arranged at intervals and form a passage channel (AB). At least one of the two verification modules (101 and 102) is rotatably arranged on the first body 103. The two verification modules are arranged at intervals in an extension direction of the passage channel (AB). Wherein the extension direction of the passage channel refers to the length direction of the passage channel. The bi-directional passage eGate shown in Fig. 1 also comprises a first closed door 105, a second closed door 106 and two information reading devices 107. The first closed door 105 and the second closed door 106 are arranged in the passage channel. Further, the first closed door 105 is close to side A and the second closed door 106 is close to side B. The closed doors are operable to respond to a verification result. When the verification is passed, the closed doors are controlled to open for the passage object which passes the verification to pass through. When the verification is failed, the closed door are controlled to remain closed and not permit the passage object which fails the verification to pass through. Two information reading devices 107 are respectively arranged at both ends of the passage channel, and operable to read an identity information of the passage object. Specifically, verification means that the passage information obtained by the verification module is compared with the information stored in the database. When the passage information accords with the information in the database, the verification is passed, otherwise the verification is failed. Further, after the information reading device 107 acquires the identity information of the passage object, the first closed door 105, which is close to the information reading device 107, is controlled to open. It can be understood that the opening and closing states of the first closed door and the second closed door change with the switch of the passage direction of the passage channel (AB). For

example, when the passage direction is from an entrance or exit A to an entrance or exit B, the opening and closing states of the first closed door 105 and the second closed door 106 are adjusted in turn. On the contrary, when the passage direction is from the entrance or exit B to the entrance or exit A, the opening and closing states of the second closed door 106 and the first closed door 105 are also adjusted in turn. Wherein, the opening and closing states of the first closed door 105 and the second closed door 106 comprise an opening state in which the passage channel is opened and a closing state in which the passage channel is closed.

In addition, the verification modules 101 and 102 can have dual functions, which comprise a verification function and a verification indication function. The functions of the two verification modules 101 can be switched according to the passage direction to provide indication on verification process and to verify the identity information of the passage object. For example, when the passage direction is from the entrance or exit A to the entrance or exit B, the verification module which is close to the entrance or exit A will be used as the verification indication module to output a verification course of the verification module to indicate the passage object for verification, while the verification module which is close to the entrance or exit B will perform the verification function to verify the identity information of the passage object. On the contrary, when the passage direction is from the entrance or exit B to the entrance or exit A, the verification module which is close to the entrance or exit A will perform the verification function to verify the identity information of the passage object, while the verification module which is close to the entrance or exit B will be used as the verification indication module to output a verification course of the verification module to indicate the passage object for verification.

It should be noted that, Fig. 2 is another simplified structure diagram of a bi-directional passage eGate in an embodiment of the present disclosure. Wherein, the bi-directional passage eGate shown in Fig.2 comprises a first body 203, a second body 204, two verification modules (201 and 202), a first closed door 205, a second closed door 206 and two information reading devices 207. Specifically, only one bi-directional passage eGate with single passage channel is shown in Figs. 1-2. In which, as shown in Fig.1, the two verification modules can be arranged separately on the two bodies of one eGate, and one verification module is arranged at the front and the other one verification module is arranged at the back. Or as shown in Fig.2, the two

verification modules can be arranged on the same body of one eGate, and one verification module is arranged at the front and the other at the back. Accordingly, in the present embodiment, there is no limitation for the body on which the verification module is arranged, and the two verification modules just should be arranged at intervals.

Please refer to Fig. 3, which is a flow chart of a bi-directional passage method in an embodiment of the present disclosure. The bi-directional passage method is applied to a passage channel, wherein two rotatable verification modules are arranged at intervals along an extension direction of the passage channel, wherein the bi-directional passage method comprises following steps.

In step 301, a passage information of a passage object, which is corresponding to the passage channel, is acquired.

It should be noted that the passage information of the passage object, which is corresponding to the passage channel, is acquired firstly. The passage information comprises but is not limited to identity information, information related to a travel of the passage object, such as the passage direction information and transfer information. The passage direction comprises an inbound direction and an outbound direction. The way to acquire the passage information of the passage object can be that, when the passage object actively places the document on the information reading device, the identity information of the passage object in the document data can be acquired by the information reading device, and the passage direction can be determined through a placement position of the document by the passage object. That is, the passage direction of the passage object is determined according to the position of the eGate, which is pointed out by the position of the information reading device, on which the document is placed by the passage object. Finally, the passage information is obtained according to the identity information and the passage direction. Taking Fig. 1 for example, the passage information of each passage object is determined by the information reading device 103. If the passage object uses the information reading device at the entrance and exit A to read the document, then the passage direction is from A to B. On the contrary, if the passage object uses the information reading device at the entrance and exit B to read the document, then the passage direction is from B to A.

In step 302, a passage control instruction according to the passage information is obtained.

In step 303, at least one of the verification modules is controlled to rotate according to the passage control instruction, an identity information of the passage object is verified through at least one of the verification modules, and a door of the passage channel is controlled to open for the passage object which passes the verification and the door of the passage channel is controlled to close for the passage object which fails the verification.

It should be noted that the passage control instruction is operable to control the rotation of the verification module, so that the verification module can rotate to the passage object to implement a passage verification on the identity information of the passage object. For the passage object which passes the verification, the door of the passage channel for the passage object to pass through is controlled to open. For the passage object which fails the verification, the door of the passage channel for the passage object to pass through is controlled to close. Among them, when the verification module verifies the identity information of the passage object, the verification module can be controlled to rotated according to the passage control instruction and then be triggered to spontaneously execute a processing process for implementing the passage verification on the identity information of the passage object. The processing process can comprise acquiring the biometric information of the passage object, comparing the biometric information with the identity information in the passage control instruction to obtain the verification result of the passage object. The biometric information comprises but is not limited to face features, iris features, fingerprint features and so on. Further, based on the verification results, for the passage object which passes the verification, the door of the passage channel for the passage object to pass through is controlled to open according to the passage control instruction, while for the passage object which fails the verification, the door of the passage channel for the passage object to pass through is controlled to close according to the passage control instruction.

In this disclosure, the bi-directional passage method is provided. The bi-directional passage method is applied to a passage channel, wherein two rotatable verification modules are arranged at intervals along an extension direction of the passage channel. The bi-directional passage method comprises: acquiring a passage information of a passage object which is corresponding to the passage channel; obtaining a passage control instruction according to the passage information; controlling at least one of the verification modules to rotate according to the

passage control instruction, verifying an identity information of the passage object through at least one of the verification modules, and controlling a door of the passage channel to open for the passage object which passes the verification and controlling the door of the passage channel to close for the passage object which fails the verification. The bi-directional passage method of this disclosure realizes the identity verification of the passage object of the passage channel by adjusting two rotatable verification modules, thus realizing the bi-directional passage of the passage channel without adding the verification module, and effectively improving the passage efficiency of the passage channel.

Please refer to Fig. 4, which is a further simplified structure diagram of a bi-directional passage eGate in an embodiment of the present disclosure. The bi-directional passage eGate shown in Fig. 4 comprises a plurality of bodies (403 and 404) and a plurality of verification modules (401 and 402). The plurality of bodies (403 and 404) are arranged in parallel, and two adjacent bodies are arranged at intervals and form a plurality of passage channels (A1B1, A2B2, A3B3 and A4B4). At least one verification module (401 and 402) is arranged on the body and two adjacent verification modules are arranged at intervals along an extension direction of the passage channels (A1B1, A2B2, A3B3 and A4B4). Wherein the extension direction of the passage channel refers to the length direction of the passage channel. As shown in Fig. 4, two verification modules (401 and 402) are arranged on the same body at intervals. The bi-directional passage eGate shown in Fig. 4 also comprises a first closed door 405, a second door 406 and two information reading devices 407. The first closed door 405 and the second closed door 406 are arranged in the eGate body, that is, the passage channels (A1B1, A2B2, A3B3 and A4B4) are arranged between the first body 403 and the second body 404. Furthermore, the first closed door 405 and the second closed door 406 in the same passage channel are operable to respond to the verification result of the passage object. When the verification is passed, the closed doors are controlled to open for the passage object which passes the verification to pass through. When the verification is failed, the closed doors are controlled to remain closed and not permit the passage object which fails the verification to pass through. Two information reading devices 407 are respectively arranged at both ends of the passage channel, and operable to obtain an identity information of the passage object from both adjacent passage channels. Further, after the information reading device 407 reads the identity information of the passage object, the first

closed door 405, which is close to the information reading device 407, is controlled to open. It can be understood that the opening and closing states of the first closed door and the second closed door change with the switch of the passage direction of the passage channels (A1B1, A2B2, A3B3 and A4B4). Among them, the verification module 401 verifies the identity information of the passage object which enters from side B of two adjacent passage channels, and the verification module 402 verifies the passage objects which enters from side A of two adjacent passage channels.

Taking two adjacent passage channels which are arranged in parallel in Fig. 4 for example, the passage channels (A1-B1) and passage channels (A2-B2) are two adjacent passage channels arranged in parallel. Rotatable verification modules 401 and 402 are arranged between the two passage channels, and the first closed door 405 is arranged in the passage channel. The information reading device 407 is arranged in the passage channel while the second closed door 406 is arranged in the passage channel, wherein the information reading device 407 is operable to read the identity information of the passage object, and the identity information comprises but is not limited to China ID card information, Singapore ID card information, Hong Kong and Macao ID card information, or biometric information that can confirm the identity information. The biometric information comprises unique biometric characteristics of each person. After the information reading device 407 obtains the identity information of the passage object, the first closed door 405 is controlled to open.

It should be noted that, the performance and structure relationship of the body, the verification module, the entrance or exit A1-A4, the entrance or exit B1-B4, the first closed door, the second closed door and the information reading device shown in Fig. 4 is similar as that of the body, the verification module, the entrance or exit A, the entrance or exit B, the first closed door, the second closed door and the information reading device shown in Fig.1 or Fig.2, so they are not repeated herein for avoiding repetition. And these performance and structure relationship can refer to the performance and structure relationship of the body, the verification module, the entrance or exit A, the entrance or exit B, the first closed door, the second closed door and the information reading device shown in Fig.1 or Fig.2. The implementation methods are not exhaustively recorded here, and all these implementation methods are within the scope of this disclosure, as long as they never depart from the technical concept of this disclosure.

Please refer to Fig. 5, which is another flow chart of a bi-directional passage method in an embodiment of the present disclosure. The bi-directional passage method is applied to a plurality of passage channels, wherein two rotatable verification modules are arranged at intervals in two adjacent passage channels. Wherein the bi-directional passage method comprises:

501, acquiring the passage information of the passage object which is corresponding to each passage channel;

502, obtaining at least one passage control instruction according to the passage information;

503, controlling the verification module to verify the identity information of each passage object in turn according to the passage control instruction, and controlling the door of the passage channel to open for the passage object which passes the verification and controlling the door of the passage channel to close for the passage object which fails the verification.

It should be noted that the contents shown in steps 501-503 are similar to those shown in steps 301-303. In order to avoid repetition, it will not be repeated here. For details, please refer to the contents shown in steps 301-303 above. The difference is that the contents shown in steps 501-503 are applied to a plurality of above passage channels, and then at least one passage control instruction can be obtained according to different passage channels to control the orderly passage of the passage channels.

In this disclosure, the bi-directional passage method is provided. The bi-directional passage method is applied to a plurality of passage channels, wherein two rotatable verification modules are arranged at intervals along an extension direction of the passage channel. The bi-directional passage method comprises acquiring the passage information of the passage object which is corresponding to each passage channel; obtaining at least one passage control instruction according to the passage information; controlling the verification module to verify the identity information of each passage object in turn according to the passage control instruction, and controlling the door of the passage channel to open for the passage object which passes the verification and controlling the door of the passage channel to close for the passage object which fails the verification. The bi-directional passage method of this disclosure realizes the identity verification of the passage object of the plurality of passage channels by adjusting two rotatable verification modules, thus realizing the bi-directional passage of the passage channel without adding the verification module, and effectively improving the passage efficiency of the passage

channel.

Please refer to Fig. 6, which is a further flow chart of a bi-directional passage method in an embodiment of the present disclosure. The bi-directional passage method is applied to a plurality of passage channels, wherein two rotatable verification modules are arranged at intervals in two adjacent passage channels. Wherein the bi-directional passage method comprises following steps.

In step 601, the passage information of the passage object which is corresponding to each passage channel, is acquired.

It should be noted that the content of step 601 shown in Fig. 6 is similar to that of step 501 shown in Fig. 5. In order to avoid repetition, it will not be repeated here. For details, please refer to the content shown in step 501 above.

In step 602, the passage information of a plurality of passage objects which are corresponding to a same passage channel and/or adjacent passage channels, is acquired, and the passage object with a verification priority among the plurality of passage objects is determined.

It should be noted that, when there are passage objects which request to enter the same passage channel and/or adjacent passage channels in the plurality of passage channels, it is necessary to obtain the passage information of each passage object which requests to enter each passage channel, so as to determine the passage object with the verification priority, thus controlling the passage of the passage object in each passage channel in a safe and orderly manner.

In a feasible implementation method, there will be two relative position relationships between the passage object and the passage channel in the present disclosure, and these relative position relationships can reflect the passage stage. One is the relative position relationship that the passage object does not enter the passage channel. This relative position relationship corresponds to a channel entry request stage when the passage object does not enter the passage channel. The other one is the relative position relationship that the passage object has entered the passage channel. This relative position relationship corresponds to a channel entered stage when the passage object has entered the passage channel. Therefore, in this embodiment, when each verification module is responsible for the identity verification of the entrances and exits on both ends of two adjacent passage channels, it is necessary to allocate the verification sequence of the

verification module according to the different passage stages, that is, to determine the verification priority of each passage object.

Further, in the channel entry request stage when the passage object does not enter the passage channel, the step 602 can comprise steps 6021, 6022 and 6023.

In step 6021, when two ends of the same passage channel have the passage object, the verification priority is given to the passage object, which is corresponding to one end of the passage channel capable of acquiring the passage information preferentially; the end of the passage channel which is corresponding to the passage object with the verification priority is defined as an entrance and the other end of the passage channel is defined as an exit; and the passage control instruction, which is operable to drive the verification module to correspond to the passage object with the verification priority, is obtained.

Taking Fig. 4 for example, step 6021 is as follows. Two ends A2 and B2 of the same passage channel (A2B2) have the passage object which requests to enter the passage channel (A2B2), that is, the passage directions of the two passage objects are opposite to each other, and the passage objects request to enter the same passage channel. Then the verification priority is given to the passage object, which is corresponding to the end of the passage channel capable of acquiring the passage information preferentially. The end of the passage channel, which is corresponding to the passage object with the verification priority, is defined as an entrance, and the opposite end is defined as an exit. Then the passage control instruction, which is operable to rotate the verification module, can be obtained. Furthermore, when the passage channel acquires the passage information of the passage object, it means that there is a passage object at the position where the passage channel acquires the passage information. The position where the passage channel acquires the passage information, comprises but is not limited to, a position within a sensing range of an infrared sensor, a position within a NFC readable range, or a position of the information reading device, and so on. Continue to take Fig.4 for example. If A2 is the end of the passage channel capable of acquiring the passage information preferentially, the passage object at A2 has the verification priority, and A2 is defined as the entrance and B2 is defined as the exit. On the contrary, if B2 is the end of the passage channel capable of acquiring the passage information preferentially, the passage object at B2 has the verification priority, and B2 is defined as the entrance and A2 is defined as the exit.

In step 6022, when same ends of the adjacent passage channels have two passage objects, the verification priority is given to the passage object, which is corresponding to the passage channel capable of acquiring the passage information preferentially; and the passage control instruction which is operable to drive the verification module to correspond to the passage object with the verification priority, is obtained.

Taking Fig. 4 for example, step 6022 is as follows. Same ends of the adjacent passage channels have two passage objects which request to enter, that is, the passage directions of the two adjacent passage objects at the adjacent passage channels are the same (entering from the same side), and the passage objects request to enter from the same end (A1 and A2, B1 and B2, A2 and A3, B2 and B3, ...) of the adjacent passage channels (A1B1 and A2B2, A2B2 and A3B3, A3B3 and A4B4, ...). Then the verification priority is given to the passage object, which is corresponding to the end of the passage channel capable of acquiring the passage information preferentially. The end of the passage channel, which is corresponding to the passage object with the verification priority, is defined as an entrance, and the opposite end is defined as an exit. Then the passage control instruction, which is operable to rotate the verification module, can be obtained. Furthermore, when the passage channel acquires the passage information of the passage object, it means that there is a passage object at the position where the passage channel acquires the passage information. The position where the passage channel acquires the passage information, comprises but is not limited to, a position within a sensing range of an infrared sensor, a position within a NFC readable range, or a position of the information reading device, and so on. Continue to take Fig.4 for example. If A2 is the end of the passage channel capable of acquiring the passage information preferentially, the passage object at A2 has the verification priority, and A2 is defined as the entrance and B2 is defined as the exit. Then the passage object at A1 would have the verification priority after the passage object, which has the verification priority at A2, has finished its verification, and then A1 is defined as the entrance and B1 is defined as the exit at this time. The working operation for the other adjacent channels having two passage objects at the same ends, is similar and would not be exhaustively recorded here.

In step 6023, when two opposite ends of the adjacent passage channels both have the passage object, the verification priority is given to the passage objects at the two opposite ends of the adjacent passage channels; and the passage control instruction, which is operable to drive one

verification module to correspond to one end of one passage channel and drive the other verification module to correspond to the other end of the other passage channel, is obtained.

Taking Fig. 4 for example, step 6023 is as follows. Two opposite ends of the adjacent passage channels both have the passage object which requests to enter, that is, the passage directions of the two adjacent passage objects at the adjacent passage channels are opposite to each other (one enters from A1 and the other enters from B2). Now take the two adjacent passage channels (A1B1 and A2B2, A2B2 and A3B3, A3B3 and A4B4, ...) for example. The opposite ends of the two adjacent passage channels A1B1 and A2B2 comprise A1 and B2 or A2 and B1, while the opposite ends of the two adjacent passage channels A3B3 and A2B2 comprise A3 and B2 or A2 and B3. The opposite ends of the other two adjacent passage channels can refer to the above distance in the same way. Further, since the two verification modules can be rotated to the opposite sides and be responsible for verification at the same time, the opposite ends of the adjacent passage channels both have the verification priority and can implement the verification at the same time. Continue to take Fig.4 for example. If the opposite ends of the adjacent passage channels are A2 and B1, the passage object at A2 can use A2 as the entrance and B2 as the exit, while the passage object at B1 can use B1 as the entrance and A1 as the exit. The working operation for the other adjacent channels having two passage objects at the opposite ends, is similar and would not be exhaustively recorded here.

It can be understood that, when detecting that a plurality of the passage channels are requested to be entered by the passage objects, it is necessary to further determine the verification priority for each passage channel, which is specifically reflected by implementing the verification priority determination of steps 6021-6023 at the same time.

For example, take the situation that two passage objects enter two adjacent passage channels respectively for example. The passage information of the two passage objects are acquired to obtain the passage control instruction which is corresponding to each passage object. When detecting that both adjacent passage channels have the passage object which requests to enter, the execution order of the passage control instruction is determined, that is, the verification priority is determined. The method for detecting whether the passage channel has the passage object which requests to enter, can comprise detecting the passage object by arranging an sensor, which comprises but is not limited to, an infrared sensor, an optoelectronic switch, or any sensor

which is capable of detecting a change of a light signal. The number of the sensor can be one or more, and is not limited herein. Whether the passage channel has the passage object which requests to enter, can be detected by arranging the sensor on the inner casing of the entrance and exit of the passage channel or at both ends of the entrance and exit.

Further, when the passage directions of the passage objects in the two adjacent passage channels are entering from the same side or entering form the opposite sides of the same passage channel, the two verification modules are respectively responsible for the identity verification of the passage objects at the entrance or exit on both sides of the two adjacent passage channels. Therefore, the verification module arranged between the adjacent passage channels needs to verify both passage objects, so it is necessary to determine the verification sequence of the two passage objects. Therefore, when the passage directions of the passage objects in the two adjacent passage channels are entering from the same side or entering for the opposite sides of the same passage channel, the verification priority of each passage object can be determined according to a distance between each passage object and the corresponding verification module, such that the verification sequence of the two passage objects can be determined. Taking Fig. 4 for example, if both passage objects place their ID cards on the information reading devices at A1 and A2, then the passage directions of the passage objects are determined as entering from the same side. If one passage object enters one passage channel from A1 and the other passage object enters the passage channel from B1, then the passage directions of the passage objects in the passage channel are determined as entering from the opposite sides of the same passage channel. If one passage object enters one passage channel from A1 and the other passage object enters another passage channel from B2, then there is no need to determine the verification priority. The passage control instruction can be executed at the same time to control both of the two verification modules to rotate and verify the two passage objects at the same time.

Further, in the channel entered stage when the passage object has entered the passage channel, the step 602 may further comprise steps 602a and 602b.

In step 602a, when at least one passage channel of the adjacent passage channels is in a state that the passage object is between the two verification modules, one passage object with the verification priority is determined from the plurality of passage objects according to a distance between each passage object and its corresponding verification module which is to verify the

passage object. It can be understood that the passage object, which has a shorter distance between itself and its corresponding verification module, would have the verification priority when compared with another passage object which has a longer distance between itself and its corresponding verification module. On the other hand, the travel direction of the passage object is defined as the forward direction, the verification module on the front of the passage object corresponds to the passage object, and the verification module on the back of the passage object can rotate to the opposite direction of the passage channel, so as to obtain the passage information of the passage object of the adjacent passage channel.

Wherein, at least one passage channel of the adjacent passage channels is in a state that the passage object is between the two verification modules, it indicates that the passage object enters the passage channel, and the verification priority is determined by obtaining the distance between each passage object and the verification module which is to verify the passage object. Wherein, the distance between the passage object and the verification module which is to verify the passage object can be obtained through the sensor. By arranging several infrared sensors or photoelectric switches, or other sensors in the passage channel according to preset intervals, the difference between the current position of the passage object and the position of the verification module, the current position of the passage object in the passage channel, or the real-time distance between the passage object and the verification module, can be determined through the changes of the signal sensed by each sensor. At this time, the verification module which is to verify the passage object is related to the entry side of the passage object. As can be seen above, each verification module is responsible for the identity verification of the entrance or exit A or B respectively. Therefore, continue to take Fig.4 for example. If the passage object enters from A2, the verification module which is to verify the passage object is 402. If the passage object enters from B2, the verification module which is to verify the passage object is 401. If the passage object enters from A1, the verification module which is to verify the passage object is 402. If the passage object enters from B1, the verification module which is to verify the passage object is 401. At this time, in order to output the verification course and verify the identity of the passage objects, it is necessary to determine the verification priority of the two passage objects in the passage channel and adjust the rotation and functions of the two verification modules in time.

In a feasible implementation, step 602a specifically comprises determining one passage

object with the verification priority from the adjacent passage channels according to a satisfaction time for each passage object to arrive at a preset distance threshold, when the distance between each passage object and its corresponding verification module satisfies the preset distance threshold.

For example, when the real-time distance between any one of the passage objects and its corresponding verification module satisfies the preset distance threshold, the satisfaction time can be recorded and sorted in chronological order to determine the passage object with the verification priority from the adjacent passage channels.

Take two passage objects entering at the same side (same A or same B) for example, the distance between the verification module and the first passage object is considered the first distance and the distance between the verification module and the second object is considered the second distance. The first distance is compared with the second distance, while the first distance and the second distance are respectively compared with the preset distance threshold, so as to determine the passage object with the verification priority. If the first distance is shorter than the second distance, and the first distance is less than or equal to the preset distance threshold, it indicates that the real-time distance satisfies the preset distance threshold and the second distance does not satisfy the above conditions. Therefore, the satisfaction time of the first passage object is earlier than that of the second passage object. After sorting the satisfaction time, the verification priority is given to the first passage object corresponding to the first distance. It can be understood that, if the second distance is shorter than the first distance and the second distance is less than or equal to the preset distance threshold, the verification priority is given to the second passage object corresponding to the second distance. Among them, the first and second are only used to distinguish, not to limit the level or order. The preset distance threshold is a fixed distance setting value, which is used to determine the verification priority of the passage object. Therefore, the preset distance threshold is determined by the longest distance between the entrance or exit and the verification module. The preset distance threshold can be less than or equal to the longest distance, but cannot be zero. When it is equal to the longest distance, it can also be used to determine the verification priority in the channel entry request stage.

In a feasible implementation, when the satisfaction times of the passage objects, which are

corresponding to each entrance and exit of the adjacent passage channels, are the same, the bi-directional passage method further comprises steps i, ii, and iii.

In step i, a transfer information of each passage object is acquired respectively, wherein the transfer information at least comprises a transfer time of the passage object. Specifically, on the premise that the times when two passage objects arrive at the corresponding verification modules to verify the passage objects are the same, the transfer information is used as the priority determination condition.

Alternatively, the transfer time may comprise a transfer time for a land transport, a transfer time for an air transport and a transfer time for a water transport.

Preferably, when the satisfaction times of the passage objects, which are corresponding to each entrance and exit of the adjacent passage channels, are the same, the verification priority of each passage object cannot be distinguished. Therefore, it is necessary to obtain the transfer information corresponding to each passage object respectively. The transfer information can be acquired and determined in the ticketing system through the identity information. The transfer information comprises but is not limited to a transfer time, a boarding gate and other information related to the transfer travel. In addition, when there is a passage object without the transfer information, the transfer time of this passage object is the maximum time by default.

In step ii, a delay index of each passage object is determined according to a current time and the transfer time of each passage object, wherein the delay index is operable to reflect a probability of a transfer delay of the passage object. Specifically, the delay index can also be a comparison value of the transfer time between two adjacent objects, that is, at the current time, the smaller the absolute value of the difference between the transfer time and the current time, the higher the probability of the transfer delay for the current passage object.

In this embodiment, when the satisfaction times of the passage objects, which are corresponding to each entrance and exit of the adjacent passage channels, are the same, instantaneous speeds and accelerations of the passage objects are acquired through the position information of the passage objects in the passage channel. Further, estimated times for the passage objects to arrive at the corresponding verification module can be obtained. When the estimated times for the passage objects in two passage channels are the same or have a difference which is within a preset range, the estimated times for the passage objects to arrive at their

corresponding verification modules are defined as the same.

An exemplary description is as follows.

Assuming that two passage objects pass through two adjacent passage channels, and the travel speed and corresponding acceleration of the two passage objects are the same, the transfer time of the two passage objects is obtained, respectively. Wherein, when both passage objects have the transfer time, then the passage object with a small difference between the transfer time and the current time has a higher priority, and the verification module corresponds to the passage object with the higher priority. When one of the two passage objects does not have the transfer time, the passage object without the transfer time is defined to have a lower priority, and the verification module corresponds to the passage object with the higher priority.

Based on the above, when both passage objects do not have the transfer time, either passage channel can be defined to have higher priority than the other according to the actual usage habits. For example, on the premise that the passage objects have the same speed and arrive at the corresponding verification modules at the same time, the passage channel on the left has higher priority, hence the passage object corresponding to the passage channel on the left can have the priority to use the verification module.

Further, after obtaining the transfer time, the delay index of each passage object is determined respectively according to the current time and the transfer time for further determining the delay probability of the passage object. The higher the delay probability, the higher the possibility of delay. On the contrary, the lower the delay probability, the lower the possibility of delay.

Step ii specifically comprises following steps.

In step ii01, a remaining transfer time of each passage object is determined according to the current time and the transfer time.

It can be understood that by subtracting the current time from the transfer time, the remaining transfer time of each transfer object can be determined, which can also be called as a remaining disposable time of each passage object. For example, the current time is Beijing time 16:30, the transfer time of the first passage object is Beijing time 17:00, while the transfer time of the second passage object is Beijing time 17:40. It can be concluded that the remaining transfer time of the first passage object is 30 mins and that of the second passage object is 40

mins.

In step ii02, a number of instantaneous speeds before each passage object enters its corresponding passage channel are acquired, and an acceleration which is corresponding to each instantaneous speed is also acquired.

Further, the number of instantaneous speeds can be acquired by the time when several pairs of opposite sensors are blocked and the distance between each pair of the opposite sensors. The number of instantaneous speeds can be acquired by taking each sensor as a node. The acceleration of each instantaneous speed can be determined according to the blocked time of each sensor before passing through this sensor node and the present sensor and the instantaneous speed. The instantaneous speed can represent the speed of movement, and the acceleration can represent the change of the instantaneous speed. For example, the sensor node can be represented by i. The first sensor node i passed by the passage object is 1, the second sensor node i is 2, and the rest can be done in the same manner as the n-th sensor node is N. The instantaneous speed of each node can be obtained by dividing the distance travelled by time. When i=1, the distance travelled is the distance from a reference position before the sensor node i=1 to the sensor node i=1, and the time is the time cost by the passage object from the reference position to the sensor node i=1. Then, the acceleration of this distance travelled can be obtained as the acceleration of the instantaneous speed according to $a_i=dv/dt$. When i=2, the distance travelled is the distance from a reference position before the sensor node i=2 to the sensor node i=2. By analogy, the instantaneous speed and acceleration of each sensor node i are obtained. The reference position can be an unified reference position, which is in front of each sensor node i.

In step ii03, a walkable distance of each passage object in its corresponding remaining transfer time is obtained, according to the remaining transfer time which is corresponding to each passage object, the number of instantaneous speeds which are corresponding to each passage object and the acceleration which is corresponding to each instantaneous speed.

In step ii04, the delay index of each passage object is obtained according to the walkable distance, a current speed and the remaining transfer time, which are corresponding to each passage object. Wherein, the delay index can be the ratio between two or three of the walkable distance, the current speed and the remaining transfer time, such as a ratio of the walkable distance to the current speed, the ratio of the walkable distance to the remaining transfer time,

the ratio of the walkable distance and the current speed to the remaining transfer time, or the ratio of the walkable distance and the current speed to the remaining transfer time.

Wherein, according to the walkable distance, current speed and remaining transfer time obtained in the above step ii03, the delay index of each passage object can be calculated respectively.

It should be noted that the greater the delay index, the higher the possibility of delay. The longer the walkable distance, the higher the possibility of delay; the greater the current speed, the lower the possibility of delay; and the greater the remaining time, the lower the possibility of delay. Secondly, the determination of the corresponding delay index is selected according to the actual embodiment. An example of one embodiment shows that when the ratio of the current speed to the remaining transfer time is selected as the delay index, the greater the ratio of the current speed to the remaining transfer time, the higher the possibility of delay under the same type of delay index.

In step iii, the passage object with the verification priority is determined according to the plurality of the delay indexes.

For example, the delay index can be sorted from a greater value to a smaller value to determine the verification priority of the passage object corresponding to each entrance or exit of two adjacent passage channels.

It can be understood that the passage object with a greater delay index has a higher possibility of delay. Therefore, it needs to be verified first. Therefore, the delay index can be sorted from a greater value to a smaller value. The greater delay index, the higher the delay index is sorted. Therefore, the verification priority is given to the passage object with a greater delay index. The verification priority of each passage object is obtained through the sorting results.

In step 602b, a passage control instruction is obtained according to the verification priority.

Specifically, at this time, step 602b can refer to the execution sequence of the passage control instruction, which corresponds to the priority relationship of each passage object.

In step 603, a passage control instruction, which is operable to control at least one of the verification modules to rotate and face the passage object with the verification priority, is obtained.

Through the processing of the above steps, the passage control instructions related to the

verification priority can be obtained to realize the purpose of rotating at least one verification module to face the passage object with the verification priority. Among them, both verification modules can be controlled to face the passage object with the verification priority, and the verification module can be used for verification indication and verification.

In step 604, the verification module is controlled to verify the identity information of each passage object in turn according to the passage control instruction, and the door of the passage channel is controlled to open for the passage object which passes the verification and the door of the passage channel is controlled to close for the passage object which fails the verification.

Further, after the verification priority of the passage object is determined, the passage object can be verified according to the verification priority, so that the verification can be carried out in an orderly manner. The verification methods comprise a biometric information verification, such as a face recognition, a fingerprint recognition and a iris recognition. For the passage object which passes the verification, the door of the passage channel where it stands can be controlled to open. It should be understood that, when the passage direction of the passage objects in two adjacent channels is not the same passage direction, it is convenient to use two verification modules to verify the passage objects respectively. Taking Fig. 4 for example, if the passage objects enter from side A, the verification module 402 verifies each passage object in turn according to the verification priority. At this time, if the passage objects enter from side A and side B respectively, then the verification module 401 is controlled verify the passage object entering from side B, while the verification module 402 is controlled verify the passage object entering from side A, so as to ensure the passage efficiency and safety.

In a feasible implementation, the working principle of the bi-directional passage eGate is as follows. When the passage object places the document on the information reading device 407 on the side A, the information reading device 407 can read the document. After obtaining the document information, the identity information and the passage direction of the passage object, that is, the passage information, can be obtained. When the information reading device 407 acquires the identity information, the closed door 405 which is close to the information reading device 407 can be opened to enable the passage object to approach the verification module 402, so that the verification module 402 can acquire the biometric information for the biometric verification of the passage object. Preferably, in order to ensure the efficiency of verification, the

verification module has dual functions, comprising a verification function and a verification indication function, so it can not only be used as the verification module, but also be used as a verification indication module. When the passage object enters from side A, the verification module 402 away from side A is determined as the verification module, and the verification module 401 close to side A is determined as the verification indication module. If the passage objects are in the same direction, the verification priority is determined. If the passage objects are in the opposite directions, the verification can be carried out separately. For example, if the passage objects are in the opposite directions, the dual functions of each verification module can be turned on to enable it to have the functions of verification and verification indication, or enable the rotation time of each verification module can be controlled according to the distance, so that when the passage object approaches the corresponding verification module, the corresponding verification module can timely verify the passage object. It can be understood that the passage direction is related to the entry side of the passage object. Therefore, the passage direction of the bi-directional passage eGate is not fixed and changeable in real time according to the entry side of the passage object. After the opened door detects the entry of the passage object, it can return to the closed state.

In a feasible implementation, step 604 can further comprise the following steps.

In step 6041, a verification duration of the passage object with the verification priority is recorded, wherein the verification duration is timed from a rotation of the verification module to a preset verification position. Wherein the first preset verification position refers to one of the positions of the verification module corresponding to the verification priority.

In a feasible implementation, the verification duration of the passage object with the verification priority can be recorded, and the verification priority can be switched to another passage object in time when the verification duration exceeds a preset duration threshold. The verification duration can be timed from the rotation of the verification module to the preset verification position

In step 6042, if the verification duration exceeds a preset duration threshold and the corresponding verification module fails to acquire the identity information of the passage object, the verification priority is given to the passage object of another passage channel, and/or, if a verification result of the corresponding verification module on the identity information of the

passage object is failed, the verification priority is given to the passage object of another passage channel. That is, when the verification priority is given to the passage object of another passage channel, the verification module rotates to the second preset verification position, wherein the second preset verification position refers to another position of the verification module corresponding to the verification priority.

It can be understood that, if the verification duration exceeds a preset duration threshold and the corresponding verification module fails to acquire the identity information of the passage object, and/or if a verification result of the corresponding verification module on the identity information of the passage object is failed, the verification priority is switched, the original recorded verification duration is cleared and recorded again.

It can be understood that the verification duration is the biometric information acquisition time of the verification module for the passage object with priority. When the verification duration exceeds the preset duration threshold, the identity information of the current passage object has not been determined. The failure to obtain the identity information refers to the failure to acquire the identity information within the specified time. For example, the passage object with the verification priority fails to face the verification module so that the biometric information cannot be acquired, or fails to verify in accordance with the regulations so that the biometric information cannot be acquired. When the passage object fails to verify correctly, the verification module cannot acquire accurately, which increases the waiting time for other verifications. Therefore, when the verification duration of the passage object with the verification priority exceeds the preset duration threshold and the identity information of the passage object with priority is not determined, the verification priority will be switched, the verification duration will be cleared and recorded again. When the identity information can be acquired and the verification fails, the verification duration will also consider too long. Therefore, the verification priority will also be switched at this time, so as to ensure the efficiency and safety of verification.

In this disclosure, the bi-directional passage method is provided. The bi-directional passage method is applied to a plurality of passage channels, and two rotatable verification modules are arranged at intervals in adjacent two passage channels, wherein the bi-directional passage method comprises acquiring the passage information of the passage object which is

corresponding to each passage channel; obtaining at least one passage control instruction according to the passage information; controlling the verification module to verify the identity information of each passage object in turn according to the passage control instruction, and controlling the door of the passage channel to open for the passage object which passes the verification and controlling the door of the passage channel to close for the passage object which fails the verification. Two rotatable verification modules, which are responsible for the identity verification of the passage objects at the two entrances and exits of the passage channel, can obtain the passage control instruction based on the passage direction and the identity information of the passage objects. Such that, not only the passage direction of the passage channel can be changed in time, but also the identity information of the passage object can be verified by rotating the verification modules, such that the passage object which passes the verification can pass through the passage channel, without adding the verification module but with improved passage security. In addition, when there are a plurality of the passage channels, at least one passage control instruction can be obtained according to the passage information to ensure the passage efficiency. When there is a request for entry in each passage channel, their verification priorities can also be determined, and the passage control passage can be executed in turn according to the verification priority to control the rotation of the verification module to ensure the passage efficiency.

Please refer to Fig. 7, which is another further simplified structure diagram of a bi-directional passage eGate in an embodiment of the present disclosure. The bi-directional passage eGate shown in Fig. 7 comprises a plurality of passage channels, and four verification modules (701 and 702) arranged at intervals along an extension direction of the passage channels. Each verification modules can be arranged in a zigzag order on the first body 703 and the second body 704. The arrangement shown in Fig. 7 can reduce the determination times of the verification priority. When the passage objects enters from A1 and A2 at the same time, the two verification modules 702 on side B can verify the passage object at the same time, and the verification module 701 on side A can output an indication information to indicate the passage object how to verify. Among them, Fig. 7 comprises four verification modules 701 and 702, two information reading devices 707 and four closed doors 705 and 706.

This disclosure has further disclosed a bi-directional passage eGate which applies the above

bi-directional passage method. And all the beneficial effects of the above method will have no more detailed description. Wherein the bi-directional passage eGate comprises a plurality of eGate bodies which are arranged in parallel, and each eGate body comprises a first body, a second body and two verification modules; wherein the first body and the second body are arranged at intervals and form a passage channel, at least one of the two verification modules is rotatably arranged on the first body, and two verification modules are arranged at intervals.

It can be understood that, as shown in Fig.1, one verification module is arranged on the first body and the other verification module is arranged on the second body. The two verification modules realize the bi-directional passage control of two adjacent passage channels. Or, as shown in Fig.2, two verification modules are arranged on the first body, and the two verification modules realize the bi-directional passage control of two adjacent passage channels.

This disclosure has further disclosed a bi-directional passage eGate which applies the above bi-directional passage method. And all the beneficial effects of the above method will have no more detailed description. Wherein the bi-directional passage eGate comprises a plurality of bodies and a plurality of verification modules, wherein the plurality of bodies are arranged in parallel, and two adjacent bodies are arranged at intervals and form a passage channel; wherein at least one verification module is arranged on the body and two verification modules are arranged at intervals.

It can be understood that, as shown in Fig. 4, two verification modules are arranged on one body, the two bodies adjacent to the one body are not provided with verification modules, and the two verification modules realize the passage verification of the two passage channels. Or, as shown in Fig.7, two verification modules are arranged on one body, and two adjacent bodies are provided with one verification module. One verification module on the one body with two verification modules is cooperated with the verification module on the adjacent body to realize the bi-directional passage verification of the corresponding passage objects.

Fig. 8 is a structural block diagram of a computer device in an embodiment of the present disclosure. The computer device can be a terminal device or a server. As shown in Fig. 8, the computer device comprises a processor, a memory and a network interface which are connected through a system bus. The memory comprises a nonvolatile storage medium and an internal memory. The nonvolatile storage medium of the computer device stores an operating system and

a computer program. When the computer program is executed by the processor, the processor can realize the above method. The computer program can also be stored in the internal memory. When the computer program is executed by the processor, the processor can execute the above method. Those skilled in the art can understand that the structure shown in Fig. 8 is only a block diagram of some structures related to the scheme of this disclosure and does not constitute a limitation on the computer device to which the scheme of the disclosure can be applied. The specific computer device may comprise more or fewer components than those shown in the figures, or may combine some components, or have different component arrangements.

In one embodiment, a computer device is proposed, including a memory and a processor. The memory stores a computer program. When the computer program is executed by the processor, it causes the processor to perform the steps of the method shown in Fig. 3, Fig. 5 or Fig. 6.

In one embodiment, a storage medium that stores a computer program, is proposed, when the computer program is executed by a processor, it causes the processor to perform the steps of the method shown in Fig. 3, Fig. 5 or Fig. 6.

In one embodiment, the storage medium is a computer-readable storage medium.

Those skilled in the art can understand that all or some procedure for realizing the above method embodiments can be completed by instructing relevant hardware through a computer program. The program can be stored in a nonvolatile computer-readable storage medium. When the program is executed, the steps of the above embodiments can be implemented. Any reference to memory, storage, database or other media used in the embodiments provided by this disclosure could comprise a nonvolatile and/or volatile memory. The nonvolatile memory could comprise read only memory (ROM), programmable ROM (PROM), electrically programmable ROM (EPROM), electrically erasable programmable ROM (EEPROM), or flash memory. The volatile memory could comprise random access memory (RAM) or external cache memory. As an illustration rather than a limitation, RAM is available in various forms, such as a static RAM (SRAM), dynamic RAM (DRAM), synchronous DRAM (SDRAM), dual data rate SDRAM (DD SDRAM), enhanced SDRAM (ESDRAM), synchronous link DRAM (SLDRAM), Rambus direct RAM (RDRAM), direct memory bus dynamic RAM (DRDRAM), and memory bus dynamic RAM (RDRAM).

The technical features of the above embodiments can be combined arbitrarily. In order to make the description concise, not all possible combinations of the technical features in the above embodiments are described. However, as long as there is no contradiction in the combination of these technical features, they should be considered as falling into the scope recorded in this description.

The above embodiments only express several embodiments of this disclosure. The description is more specific and detailed, but it cannot be understood as limiting the protection scope of this disclosure. It should be noted that for those skilled in the art, several modifications and improvements can be made without departing from the concept of this disclosure, and these modifications and improvements still belong to the protection scope of this disclosure. Therefore, the protection scope of this disclosure shall be subject to the appended claims.

CLAIMS

1. A bi-directional passage method which is applied to a passage channel, wherein two rotatable verification modules are arranged at intervals along an extension direction of the passage channel, wherein the bi-directional passage method comprises:

acquiring a passage information of a passage object which is corresponding to the passage channel;

obtaining a passage control instruction according to the passage information;

controlling at least one of the verification modules to rotate according to the passage control instruction, verifying an identity information of the passage object through at least one of the verification modules, controlling a door of the passage channel to open for the passage object which passes the verification, and controlling the door of the passage channel to close for the passage object which fails the verification.

2. The bi-directional passage method according to claim 1, wherein the bi-directional passage method is applied to a plurality of the passage channels, and two rotatable verification modules are arranged at intervals in adjacent two passage channels, wherein the bi-directional passage method comprises:

acquiring the passage information of the passage object which is corresponding to each passage channel;

obtaining at least one passage control instruction according to the passage information;

controlling the verification module to verify the identity information of each passage object in turn according to the passage control instruction, controlling the door of the passage channel to open for the passage object which passes the verification, and controlling the door of the passage channel to close for the passage object which fails the verification.

3. The bi-directional passage method according to claim 2, wherein, obtaining at least one passage control instruction according to the passage information, comprises:

acquiring the passage information of the plurality of passage objects which are corresponding to a same passage channel and/or adjacent passage channels, and determining the passage object with a verification priority among the plurality of passage objects;

obtaining the passage control instruction which is operable to control at least one of the verification modules to rotate and face the passage object with the verification priority.

4. The bi-directional passage method according to claim 3, wherein, acquiring the passage information of a plurality of passage objects which are corresponding to a same passage channel and/or adjacent passage channels, and determining the passage object with a verification priority among the plurality of passage objects, comprises:

when two ends of the same passage channel have the passage object, giving the passage object, which is corresponding to one end of the passage channel capable of acquiring the passage information preferentially, the verification priority; defining the end of the passage channel which is corresponding to the passage object with the verification priority as an entrance and the other end of the passage channel as an exit; and obtaining the passage control instruction which is operable to drive the verification module to correspond to the passage object with the verification priority;

when same ends of the adjacent passage channels have the passage objects, giving the passage object, which is corresponding to the passage channel capable of acquiring the passage information preferentially, the verification priority; and obtaining the passage control instruction which is operable to drive the verification module to correspond to the passage object with the verification priority;

when the two opposite ends of the adjacent passage channels both have the passage objects, giving the passage objects, at two opposite ends of the adjacent passage channels, the verification priority; and obtaining the passage control instruction which is operable to drive one verification module to correspond to one end of one passage channel and drive the other verification module to correspond to the other end of the other passage channel.

5. The bi-directional passage method according to claim 3, wherein, acquiring the passage information of a plurality of passage objects which are corresponding to a same passage channel and/or adjacent passage channels, and determining the passage object with a verification priority among the plurality of passage objects, further comprises:

determining one passage object with the verification priority from the plurality of passage objects according to a distance between each passage object and its corresponding verification module which is to verify the passage object, when at least one passage channel of the adjacent passage channels is in a state that the passage object is between the two verification modules; and

obtaining the passage control instruction according to the verification priority.

6. The bi-directional passage method according to claim 5, wherein, determining one passage object with the verification priority from the plurality of passage objects according to a distance between each passage object and its corresponding verification module which is to verify the passage object, comprises:

determining one passage object with the verification priority from the adjacent passage channels according to a satisfaction time for each passage object to arrive at a preset distance threshold, when the distance between each passage object and its corresponding verification module satisfies the preset distance threshold.

7. The bi-directional passage method according to claim 6, wherein, when the satisfaction times of the passage objects which are corresponding to each entrance and exit of the adjacent passage channels are the same, the bi-directional passage method further comprises:

acquiring a transfer information of each passage object respectively, wherein the transfer information at least comprises a transfer time of the passage object;

determining a delay index of each passage object according to a current time and the transfer time of each passage object, wherein the delay index is operable to reflect a probability of a transfer delay of the passage object;

determining the passage object with the verification priority according to a plurality of the delay indexes.

8. The bi-directional passage method according to claim 7, wherein, determining a delay index of each passage object according to a current time and the transfer time of each passage object, comprises:

determining a remaining transfer time of each passage object according to the current time and the transfer time;

acquiring a number of instantaneous speeds before each passage object enters its corresponding passage channel, and acquiring an acceleration which is corresponding to each instantaneous speed;

obtaining a walkable distance of each passage object in its corresponding remaining transfer time, according to the remaining transfer time which is corresponding to each passage object, the number of instantaneous speeds which are corresponding to each passage object and the

acceleration which is corresponding to each instantaneous speed;

obtaining the delay index of each passage object according to the walkable distance, a current speed and the remaining transfer time, which are corresponding to each passage object.

9. The bi-directional passage method according to claim 6, wherein, the bi-directional passage method further comprises:

recording a verification duration of the passage object with the verification priority, wherein the verification duration is timed from a rotation of the verification module to a preset verification position;

giving the verification priority to the passage object of another passage channel, if the verification duration exceeds a preset duration threshold and the corresponding verification module fails to acquire the identity information of the passage object, and

giving the verification priority to the passage object of another passage channel, if a verification result of the corresponding verification module on the identity information of the passage object is failed.

10. The bi-directional passage method according to claim 6, wherein, the bi-directional passage method further comprises:

recording a verification duration of the passage object with the verification priority, wherein the verification duration is timed from a rotation of the verification module to a preset verification position; and

giving the verification priority to the passage object of another passage channel, if the verification duration exceeds a preset duration threshold and the corresponding verification module fails to acquire the identity information of the passage object.

11. The bi-directional passage method according to claim 6, wherein, the bi-directional passage method further comprises:

giving the verification priority to the passage object of another passage channel, if a verification result of the corresponding verification module on the identity information of the passage object is failed.

12. A bi-directional passage method which is applied to a passage channel, wherein two rotatable verification modules are arranged at intervals along an extension direction of the passage channel, wherein the bi-directional passage method comprises:

acquiring a passage information of a passage object which is corresponding to the passage channel;

acquiring the passage information of the plurality of passage objects which are corresponding to a same passage channel, and determining the passage object with a verification priority among the plurality of passage objects;

obtaining the passage control instruction which is operable to control at least one of the verification modules to rotate and face the passage object with the verification priority;

controlling at least one of the verification modules to rotate according to the passage control instruction, verifying an identity information of the passage object through at least one of the verification modules, controlling a door of the passage channel to open for the passage object which passes the verification, and controlling the door of the passage channel to close for the passage object which fails the verification.

13. A bi-directional passage eGate which applies the bi-directional passage method according to any one of claims 1-12, wherein the bi-directional passage eGate comprises a plurality of eGate bodies which are arranged in parallel;

wherein each eGate body comprises a first body, a second body and two verification modules, the first body and the second body are arranged at intervals and form a passage channel;

at least one of the two verification modules is rotatably arranged on the first body, and two verification modules are arranged at intervals.

14. A bi-directional passage eGate which applies the bi-directional passage method according to any one of claims 1-12, wherein the bi-directional passage eGate comprises a plurality of bodies and a plurality of verification modules, wherein the plurality of bodies are arranged in parallel, and two adjacent bodies are arranged at intervals and form a passage channel;

wherein at least one verification module is arranged on the body and two adjacent verification modules are arranged at intervals.

15. A storage medium which stores a computer program, wherein when the computer program is executed by a processor, the processor performs steps in the bi-directional passage method according to any one of claims 1-12.