DESCRIPTION

Title of Invention: GATE APPARATUS, CONTROL METHOD OF GATE APPARATUS, AND STORAGE MEDIUM

[Technical Field]

[0001]

The present invention relates to a gate apparatus, a gate apparatus control method, and a storage medium.

[Background Art]

[0002]

Emigration and immigration examination is performed at airports. An officer in charge of the emigration and immigration examination compares a photograph of a face attached to a passport with the face of a person in front of the officer. If the face image in the passport does not match the face of the person in front of the officer, the emigration and immigration of the person is not permitted.

[0003]

In recent years, apparatuses that automatically perform the emigration and immigration examination have been introduced. For example, a gate apparatus disclosed in NPL 1 performs the emigration and immigration examination by comparing previously registered biological information with biological information acquired by the gate apparatus.

[Citation List]

[Non Patent Literature]

[0004]

[NPL 1] Ministry of Justice, “How to use an automated gate (notice)”, [online], [search performed in December, 2019], Internet <URL:http://www.moj.go.jp/nyuukokukanri/kouhou/nyuukokukanri01_00111.html>

[Summary ~~of Invention~~]

[Technical Problem]

[0005]

The gate apparatus disclosed in the above NPL 1 requires a user to stand in front of the gate apparatus and perform a prescribed operation.

Specifically, the user is required to place his or her passport on a passport scanner provided by the gate apparatus. In this way, the user of the gate apparatus disclosed in the NPL 1 is required to perform certain actions in front of the gate apparatus. Therefore, a space is provided for users to place their baggage on the gate apparatus or near the gate apparatus. The user is supposed to place his or her baggage on the space and operate the gate apparatus. Upon completion of an emigration and immigration examination by the gate apparatus and upon leaving the gate apparatus, the user may leave his or her baggage behind.

[0006]

It is a main object of the present ~~invention~~ disclosure to provide a gate apparatus, a gate apparatus control method, and a storage medium that contribute to preventing a user from leaving a baggage placement area without his or her baggage.

[Solution to Problem]

[0007]

According to a first aspect of the present ~~invention~~disclosure, there is provide a gate apparatus including: a detection unit that detects whether there is an object in a baggage placement area; an alert unit that gives, if there is the object in the baggage placement area, an alert about left-behind baggage; and a gate control unit that controls, if there is the object in the baggage placement area, a gate such that an examination target user cannot pass through the gate.

[0008]

According to a second aspect of the present ~~invention~~disclosure, there is provided a control method of a gate apparatus, the control method including: detecting whether there is an object in a baggage placement area; giving, if there is the object in the baggage placement area, an alert about left-behind baggage; and controlling, if there is the object in the baggage placement area, a gate such that an examination target user cannot pass through the gate.

[0009]

According to a third aspect of the present ~~invention~~disclosure, there is provided a ~~computer readable storage medium storing a~~ program that

causes a computer mounted on a gate apparatus to perform processing for: detecting whether there is an object in a baggage placement area; giving, if there is the object in the baggage placement area, an alert about left-behind baggage; and controlling, if there is the object in the baggage placement area, a gate such that an examination target user cannot pass through the gate.

[Advantageous Effects of Invention]

[0010]

The individual aspects of the present ~~invention~~ disclosure provide a gate apparatus, a gate apparatus control method, and a storage medium that contribute to preventing a user from leaving a baggage placement area without his or her baggage. The advantageous effect of the present invention is not limited to the above advantageous effect. The present invention may provide other advantageous effects, instead of or in addition to the above advantageous effect.

[Brief Description of the Drawings]

[0011]

[Fig. 1] Fig. 1 is a diagram illustrating an outline of an example embodiment.

[Fig. 2] Fig. 2 is a diagram illustrating an example of a schematic configuration of an emigration and immigration examination system according to the first example embodiment.

[Fig. 3] Fig. 3 is a diagram illustrating an example of a processing configuration of a server apparatus according to the first example embodiment.

[Fig. 4] Fig. 4 is a diagram illustrating an example of a hardware configuration of the server apparatus according to the first example embodiment.

[Fig. 5] Fig. 5 is a diagram illustrating an example of the exterior of a gate apparatus according to the first example embodiment.

[Fig. 6] Fig. 6 is a diagram schematically illustrating a cross section of the gate apparatus according to the first example embodiment.

[Fig. 7] Fig. 7 is an example of a front view schematically illustrating a baggage placement area of the gate apparatus according to the first

CLAIMS

1. A gate apparatus comprising:

a detection unit that detects whether there is an object in a baggage placement area;

an alert unit that gives, if there is the object in the baggage placement area, an alert about left-behind baggage; and

a gate control unit that controls, if there is the object in the baggage placement area, a gate such that an examination target user cannot pass through the gate.

2. The gate apparatus according to claim 1, further comprising:

a face image acquisition unit that acquires a first face image of the examination target user by controlling a camera device; and

a passport possession determination unit that acquires a second face image stored in a passport possessed by the examination target user and determines whether the examination target user possesses a correct passport by performing matching between the first and second face images, wherein

the gate control unit controls the gate, if the examination target user does not possess the correct passport, such that the examination target user cannot pass through the gate.

3. The gate apparatus according to claim 2, further comprising:

a fingerprint image acquisition unit that acquires a fingerprint image of the examination target user; and

an examination request unit that requests a server apparatus to perform an emigration and immigration examination on the examination target user by transmitting an examination request including the acquired fingerprint image to the server apparatus storing the fingerprint images of users whose emigration and immigration is permitted, wherein

the gate control unit controls the gate, if an examination result from the server apparatus indicates that emigration and immigration is not permitted, such that the examination target user cannot pass through the gate.

4. The gate apparatus according to claim 3, wherein the alert unit gives the alert about the left-behind baggage if there is the object in the baggage placement area at a timing when the examination result is received from the server apparatus and the determination regarding possession of the passport is completed.

5. The gate apparatus according to claim 4, wherein the detection unit sets a baggage detection flag If there is the object in the baggage placement area or clears the baggage detection flag If there is no object in the baggage placement area.

6. The gate apparatus according to claim 5, wherein the alert unit checks the baggage detection flag at a timing when the examination result is received from the server apparatus and the determination regarding possession of the passport is completed.

7. The gate apparatus according to claim 6, wherein the passport possession determination unit reads out MRZ (Machine Readable Zone) information written in a Machine Readable Zone in the passport and acquires the second face image stored in an IC (Integrated Circuit) chip in the passport by using the MRZ information.

8. The gate apparatus according to claim 7, wherein the passport possession determination unit acquires the second face image by decrypting information read out from the IC chip by using the MRZ information.

9. The gate apparatus according to claim 8, wherein the passport possession determination unit performs 1-to-1 matching by using the first and second face images and determines, if the 1-to-1 matching succeeds, that the examination target user possesses the correct passport.

10. The gate apparatus according to claim 9, wherein the detection unit detects presence of objects located on an area vertically upward of the baggage placement area or a side area of the baggage placement area.

11. The gate apparatus according to any one of claims 1 to 10, wherein the alert unit determines contents of the alert about left-behind baggage by using information obtained from the passport.

12. The gate apparatus according to any one of claims 1 to 11, wherein the alert unit change language of the alert about left-behind baggage based on a nationality of the examination target user.

13. A control method of a gate apparatus, the control method comprising:

detecting whether there is an object in a baggage placement area;

giving, if there is the object in the baggage placement area, an alert about left-behind baggage; and

controlling, if there is the object in the baggage placement area, a gate such that an examination target user cannot pass through the gate.

14. A ~~computer readable storage medium storing a~~ program that causes a computer mounted on a gate apparatus to perform processing for:

detecting whether there is an object in a baggage placement area;

giving, if there is the object in the baggage placement area, an alert about left-behind baggage; and

controlling, if there is the object in the baggage placement area, a gate such that an examination target user cannot pass through the gate.