# DESCRIPTION

## Title of Invention

INFORMATION PROCESSING DEVICE, INFORMATION PROCESSING SYSTEM, AND ESTIMATION METHOD

## Technical Field

[0001] The present disclosure relates to an information processing apparatus, an information processing system, and an estimation method.

## Background Art

[0002] Techniques for managing entry and exit of a person passing through a gate installed in a station, an airport, or the like are known. Patent Literature (hereinafter, referred to as "PTL") 1 describes an apparatus that, when a person enters a gate from an entrance of the gate while gaining permission for gate passage using a contactless card, tracks whether or not the person has passed through the gate (whether or not the person returns to the entrance of the gate) based on a change in position of the contactless card.

## Citation List

### Patent Literature

[0003]

PTL 1

Japanese Patent Application Laid-Open No. H09-330440

## Summary

[0004] A gate that manages entry and exit is desired to manage which person has passed through the gate. Hereinafter, this management may also be simply referred to as "passage

management" or "tracking management." There is scope for further study on the improvement in estimation accuracy of estimating the position of a person in the tracking management.

[0005] One non-limiting example of the present disclosure facilitates providing an information processing apparatus, an information processing system, and an estimation method capable of improving estimation accuracy of estimating the position of an example passing through a particular region.

[0006] An information processing apparatus according to one aspect of the present disclosure includes: a detector that detects a first face image region included in a first image of a person entering a gate and a second face image region included in a second image of the person, the first image being captured in a first direction, the second image being captured in a second direction different from the first direction; and an estimator that estimates a position of the person in the gate based on a change in a relative positional relation between the first face image region and the second face image region.

[0007] An information processing system according to another aspect of the present disclosure includes: an authentication apparatus that executes an authentication process of authenticating a person using at least one of a first image of a person entering a gate and a second image of the person, the first image being captured in a first direction, the second image being captured in a second direction different from the first direction; and an information processing apparatus that detects a first face image region included in the first image and a second face image region included in the second image, and estimates a position of the person in the gate based on a change in a relative positional relation between the first face image region and the second face image region.

[0008] An estimation method according to another aspect of the present disclosure includes steps performed by an information processing apparatus of: detecting a first face image region included in a first image of a person entering a gate and a second face

image region included in a second image of the person, the first image being captured in a first direction, the second image being captured in a second direction different from the first direction; and estimating a position of the person in the gate based on a change in a relative positional relation between the first face image region and the second face image region.

[0009] It should be noted that a general or specific example may be implemented as a system, an apparatus, a method, an integrated circuit, a computer program, a storage medium, or any selective combination thereof.

[0010] One non-limiting example of the present disclosure makes it possible to improve estimation accuracy of estimating the position of an example passing through a particular region.

[0011] Additional benefits and advantages of the disclosed examples will become apparent from the specification and drawings. The benefits and/or advantages may be individually obtained by the various examples and features of the specification and drawings, which need not all be provided in order to obtain one or more of such benefits and/or advantages.

Brief Description of Drawings

[0012]

FIG. 1 is a diagram illustrating an example of a gate according to an example;

FIG. 2A is a diagram illustrating an example of a concept of a configuration of a passage management system according to an example;

FIG. 2B is a block diagram illustrating a configuration example of the passage management system according to an example;

FIG. 3A is a diagram illustrating an example of a zone defined for a gate;

FIG. 3B is a diagram illustrating an example of a zone defined for a gate;

FIG. 4 is a diagram illustrating an example of detection of a face frame according to