WHAT IS CLAIMED IS:

1. A passenger detection system of an elevator comprising a camera installed in a car to capture a predetermined range including an inside of the car, the system comprising:

a luminance gradient detection unit detecting a luminance gradient direction in each pixel of a captured image of the camera, in any angle unit;

a differential feature amount generation unit generating a differential feature amount for extracting variation in the luminance gradient direction detected by the luminance gradient detection unit;

a moving body detection unit detecting a moving body, based on the differential feature amount generated by the differential feature amount generation unit; and

a person detection unit detecting the moving body as a person, based on information on the moving body detected by the moving body detection unit,

wherein the moving body detection unit:

extracts a part where the luminance gradient direction is changed as a luminance gradient direction difference, by comparing the differential feature amounts between the images continuously obtained as the captured images,

obtains a luminance difference between images obtained continuously as the captured images, and

detects the moving body from the captured images, based on the luminance gradient direction difference and the luminance difference between the images.

2. The system of claim 1, wherein

the luminance gradient detection unit detects at least four or more values of the luminance gradient direction.

3. The system of claim 1, wherein

the luminance gradient detection unit detects nine values of the luminance gradient direction including no luminance gradient.

4. The system of claim 1, wherein

the moving body detection unit uses a rate at which the differential feature amounts match or a rate at which the differential feature amounts are similar, in each of the images, as an index of variation determination of the luminance gradient direction.

5. The system of claim 1, wherein

the moving body detection unit extracts the part where the luminance gradient direction is changed as the luminance gradient direction difference, based on the number or rate of images in which the luminance gradient direction is determined to be changed, of the images.

6. The system of claim 1, wherein

the moving body detection unit easily detects a parameter of the luminance difference for an area with a number of variations in the luminance gradient direction, in the captured images, and hardly detects the parameter of the luminance difference for an area with a few variations in the luminance gradient direction, in the captured images.

7. The system of claim 1, wherein

the moving body detection unit uses the luminance difference for the area with a number of variations in the luminance gradient direction, in the captured

images, and uses the luminance gradient direction difference for the area with a few variations in the luminance gradient direction, in the captured images.

8. The system of claim 1, wherein

the moving body detection unit uses the luminance difference for an area where the luminance gradient direction is not uniform, in the captured images, and uses the luminance gradient direction difference for an area where the luminance gradient direction is uniform, in the captured images.

9. The system of claim 1, wherein

the person detection unit detects the moving body as a person, based on at least one of a distribution of motion pixels, a size of the moving body, and a moving body detection count, which are obtained as information on the moving body.

10. The system of claim 1, further comprising:

a control unit which, when the person is detected in a detection area preset in the captured image, executes a responsive process associated with the detection area.

11. The system of claim 10, wherein

the detection area is set near a door inside the car, and

the control unit controls door opening and closing operations to prevent the person from being caught by a door during the door opening operation of the car, as the responsive process.