

CLAIMS:

1. A method of monitoring a moving object within a predetermined monitoring area, characterized in that the method
5 comprising steps of:

detecting objects by scanning the monitoring area by an optical distance meter;

identifying moving objects among the detected objects;

10 setting, as a tracking target, among the identified moving objects, a moving object which is present in the monitoring area and which is newest identified; and

automatically tracking the moving object which has been set as the tracking target, by an camera apparatus,

15 wherein, when there are present a plurality of moving objects which are identified as being the newest,

the tracking target is set in an order of starting from a moving object located the nearest to a border of the monitoring area, and

20 the identified tracking target is automatically tracked, the setting and the automatically tracking being repeated for all the identified moving objects; and

wherein, when a response time is longer than a predicted time, the response time being a period of time required to automatically track a moving object newly set as a tracking target, the predicted time being a period of time necessary for the newly set tracking target to reach a
25 priority monitoring object which is preset in the monitoring area, a priority monitoring area including the priority monitoring object is monitored, in fixed-point monitoring, at a wide angle by using the camera device.

30 2. The method of claim 1, characterized in that, when a count showing that a tracking period becomes lower successively than a lower limit value becomes larger than a lower determination count, the same moving object being automatically tracked during the tracking period, a priority monitoring area including a priority monitoring object preset in
35 the monitoring area is monitored, in fixed-point monitoring, at a wide angle by using the camera device.

3. The method of claim 1 or 2, characterized in that, when a count showing that the tracking target has been switched to other tracking targets in a predetermined determination period has exceeded
5 a predetermined upper determination count, a priority monitoring area including a priority monitoring object preset in the monitoring area is monitored, in fixed-point monitoring, at a wide angle by using the camera device.

10 4. The method of any one of claims 1 to 3, characterized in that, when any of the moving objects in the priority monitoring area is selected during the fixed-point monitoring the priority monitoring area at the wide angle using the camera device, the selected moving object is set as the tracking target for the automatic tracking.

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5. A method of monitoring a moving object within a predetermined monitoring area, characterized in that the method comprising steps of:

20 detecting objects by scanning the monitoring area by an optical distance meter;

identifying moving objects among the detected objects;

setting, as a tracking target, among the identified moving objects, a moving object which is present in the monitoring area and which is newest identified; and

25 automatically tracking the moving object which has been set as the tracking target, by an camera apparatus,

wherein, when there are present a plurality of moving objects which are identified as being the newest,

30 the tracking target is set in an order of starting from a moving object located the nearest to a border of the monitoring area, and

the identified tracking target is automatically tracked, the setting and the automatically tracking being repeated for all the identified moving objects; and

wherein the method comprises steps of:

35 determining whether or not a plurality of the moving objects are identified in the monitoring area,

determining whether or not a predetermined tracking release condition, which is set for releasing the automatic tracking using the camera device has been met when it is determined that the plurality of the moving objects are identified in the monitoring area, and

5 enlarging and monitoring, in fixed-point monitoring, preset priority monitoring areas including the priority monitoring object present in the monitoring area with use of the camera device, when it is determined that the tracking release condition is met.

10 6. The method of claim 5, characterized in that the tracking release condition is set such that a count showing that a tracking period becomes lower successively than a lower limit value becomes larger than a lower determination count, the same moving object being automatically tracked during the tracking period.

15 7. The method of claim 5 or 6, characterized in that the tracking release condition is set such that a count showing that the tracking target has been switched to other tracking targets in a predetermined determination period has exceeded a predetermined upper determination count.

20 8. The method of any one of claims 5 to 7, characterized in that the tracking release condition is set such that a response time required to automatically track a moving object newly set as a tracking target is longer than a predicted time necessary for the newly set moving object to reach the priority monitoring object.

25 9. The method of any one of claims 5 to 8, characterized in that the tracking release condition is set such that the number of identified moving objects exceeds a predetermined upper number.

30 10. The method of any one of claims 5 to 9, characterized in that the tracking release condition is set such a period of time during which the priority monitoring object or the priority monitoring area is not continuously monitored is over a predetermined upper limit.

11. The method of any one of claims 5 to 10, characterized in that the priority monitoring area is set as an area in which, at least, a plurality of the moving objects are able to be imaged.

5 12. A method of monitoring a moving object, by which a monitoring area is scanned by an optical distance meter to detect moving objects, a moving object is identified among the detected moving objects, and the identified moving object is set to a tracking target for automatic tracking by a camera device, characterized in that
10 the method comprising steps of:

 determining whether or not it is identified that there are a plurality of the moving objects in the monitoring area;

 determining whether or not a preset tracking release condition is met when it is determined that the plurality of the moving objects are
15 identified, the tracking release condition being set for releasing the automatic tracking performed using the camera device;

 enlarging a priority monitoring area which is preset to include a priority monitoring object present in the monitoring area and performing, in a fixed-point monitoring, the enlarged priority
20 monitoring area by using the camera device, when it is determined that the tracking release condition is met.

13. An apparatus for monitoring a moving object in a preset monitoring area, characterized in that the apparatus comprises

25 means for detecting objects by scanning the monitoring area using an optical distance meter;

 means for identifying moving objects among the detected objects;

 means for setting, as a tracking target, among the specified
30 moving objects, a moving object which is present in the monitoring area and which is newest identified;

 means for automatically tracking the moving object which is set as the tracking target being automatically tracked, by an camera apparatus;

means for automatically tracking the moving object which is set as the tracking target being automatically tracked, by the camera apparatus;

5 means for setting the tracking target in an order of starting from a moving object located the nearest to a border of the monitoring area for repeating automatic tracking of the tracking target so that all the tracking targets are set through the repletion, when there are present a plurality of the moving objects which are identified as being the newest; and

10 means for performing, using the camera device, fixed-point monitoring of a priority monitoring area including the priority monitoring object at a wide angle, when a response time is longer than a predicted time, the response time being a period of time required to automatically track a moving object newly set as a tracking target, the
15 predicted time being a period of time necessary for the newly set tracking target to reach a priority monitoring object which is preset in the monitoring area.