

Claims:

1. Method for determining estimated real dimensions of an elevator car (7), the method comprising following steps:
 - 5 (a) acquiring a virtual 2-dimensional map (30) of the elevator car (7) based on data provided by a lidar sensor (17), the virtual 2-dimensional map (30) representing reflection surfaces (33) from which laser light emitted by the lidar sensor (17) is reflected,
 - (b) defining a starting area (41) as a rectangular area (45) at a position located within the real dimensions of the elevator car (7),
 - 10 (c) successively extending the rectangular area (45) by one pixel in each of four extension directions (47) orthogonal to edges (43) of the rectangular area (45), including, in case any pixel in one of the extension directions (47) corresponds to one of the reflection surfaces (33) indicated in the virtual 2-dimensional map (30), stopping extending the rectangular area (45) in this extension direction (47) and successively extending the
 - 15 rectangular area (45) by one pixel only in each of the remaining extension directions (47), until having fully extended the rectangular area (45) to a maximum in each of the extension directions (47), and
 - (d) determining the fully extended rectangular area (45) as the estimated real dimensions of the elevator car (7).
- 20 2. Method of claim 1, wherein the starting area (41) is defined based on prior knowledge data indicating additional information about the real dimensions of the elevator car (7).
- 25 3. Method of one of the preceding claims, wherein the starting area is defined at or close to a geometric center of the elevator car (7).
- 30 4. Method of one of the preceding claims, wherein the starting area (41) is defined with edges (43) of the rectangular area (45) being parallel to walls (9) of the elevator car (7).
5. Method of one of the preceding claims, wherein steps (b) to (c) are repeated in iterations with defining the starting area (41) in

step (b) at various positions located within the real dimensions of the elevator car (7).

6. Method of claim 5, wherein, in each of subsequent iterations, the starting area (41) is defined at a position located within the fully extended rectangular area (45) determined in a first iteration.

7. Method of one of claims 5 and 6, wherein, in step (d), in case all iterations result in a same fully extended rectangular area (45), providing the fully extended rectangular area (45) as the estimated real dimensions of the elevator car (7).

8. Method of one of claims 5 and 6, wherein, in step (d), in case the iterations result in differing fully extended rectangular areas (45), selecting a most-likely solution among the differing fully extended rectangular areas taking into account additional prior knowledge and determining the most-likely solution as the estimated real dimensions of the elevator car (7).

9. Method of one of claims 5 to 8, wherein each determined fully extended rectangular area (45) not including the starting area (41) defined in the first iteration is disregarded upon the determining the estimated real dimensions of the elevator car (7).

10. Computing device (29) for determining estimated real dimensions of an elevator car (7), characterized in that the computing device (29) being configured for one of executing and controlling the method according to one of claims 1 to 9.

11. Maintenance arrangement (1) for providing support in maintaining an elevator arrangement (3), the maintenance arrangement (1) comprising:
a mapping robot (5) comprising a mobilisation unit (13) and a lidar sensor (17), the mapping robot (5) being configured for traveling along an accessible space in the elevator arrangement (3) driven by the mobilisation unit (13) and for acquiring a virtual 2-dimensional map (30) of a surrounding of the mapping robot (5) using the lidar sensor (17), and
a computing device (29) according to claim 10,
wherein the computing device (29) is configured for determining estimated real

dimensions of an elevator car (7) based on a virtual 2-dimensional map (30) of the elevator car (7) acquired with the lidar sensor (17) of the mapping robot (5).

12. Maintenance arrangement of claim 11,
5 wherein at least one of the mapping robot (5) and an optional maintenance robot comprising a mobilisation unit is configured for executing maintenance procedure within an elevator car (7), and
wherein the at least one of the mapping robot (5) and the maintenance robot is configured
10 for moving within the elevator car (7) taking into account the determined estimated real dimensions of an elevator car (7).
13. Computer program product comprising computer readable instructions
instructing a processor for one of executing and controlling the method according to one
of claims 1 to 9.
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14. Computer readable medium having stored thereon the computer program
product according to claim 13.