

【CLAIMS】**【Claim 1】**

A method for checking a moving available area of a robot on a moving surface in order to allow the robot to autonomously move on the moving surface of a curved surface, the method comprising:

a) generating a geometric model of the moving surface divided into a plurality of curved surfaces;

b) dividing the plurality of curved surfaces into a plurality of triangles by using the geometric model;

c) calculating angles between the plurality of triangles and triangles adjacent to the plurality of triangles; and

d) determining whether or not the angles are within a predetermined range.

【Claim 2】

The method of claim 1, wherein:

in step b), each of the plurality of triangles is substantially a flat surface.

【Claim 3】

The method of claim 1, wherein:

in step b), the one curved surface is divided into a plurality of triangles such that triangles adjacent to each other within the one curved surface share an edge and a vertex.

【Claim 4】

The method of claim 3, wherein:

in step c), angles between the adjacent triangles that share the edge or
5 the vertex are calculated.

【Claim 5】

The method of claim 4, wherein:

in step c), when angles between triangles, which are positioned at a
10 boundary between two curved surfaces adjacent to each other and are
respectively positioned on the two adjacent curved surfaces, are calculated,
angles between triangles whose edge and edge, edge and vertex, or vertex and
vertex meet each other are calculated.

【Claim 6】

The method of claim 1, further comprising:

after step d),

e) checking primary moving available areas by defining the triangles as
the moving available areas the when the angles are within the predetermined
20 range.

【Claim 7】

The method of claim 1, wherein:

in step c), the angles are calculated using angles between normal vectors of the adjacent triangles.

【Claim 8】

5 The method of claim 6, further comprising:

after step e),

checking a secondary moving available area by setting the robot to have a predetermined size, moving the robot in the moving available areas, and then by defining an area where the robot does not intersect with the moving surface
10 as a moving available area.

【Claim 9】

A robot that stores a program for executing the method for checking a moving available area of a robot on a moving surface of any one of claims 1 to 8
15 or moves on a moving surface by being controlled by an external device that stores the program.

【Claim 10】

A computer-readable recording medium that stores a program for
20 executing the method for checking a moving available area of a robot on a moving surface of any one of claims 1 to 8.

【CLAIMS】**【Claim 1】**

A method for checking a moving available area of a robot on a moving surface in order to allow the robot to autonomously move on the moving surface
5 of a curved surface, the method comprising:

a) generating a geometric model of the moving surface divided into a plurality of curved surfaces;

b) dividing the plurality of curved surfaces into a plurality of triangles by using the geometric model;

10 c) calculating angles between the plurality of triangles and triangles adjacent to the plurality of triangles;

d) determining whether or not the angles are within a moving allowable range of the robot; and

e) checking primary moving available areas by defining the triangles as
15 the moving available areas the when the angles are within the moving allowable range of the robot,

wherein:

in step b), the one curved surface is divided into a plurality of triangles such that triangles adjacent to each other within the one curved surface share an
20 edge and a vertex, and

in step c), angles between surfaces formed by the adjacent triangles that share the edge or the vertex are calculated.

【Claim 2】

The method of claim 1, wherein:

in step c), when angles between triangles, which are positioned at a boundary between two curved surfaces adjacent to each other and are respectively positioned on the two adjacent curved surfaces, are calculated,
5 angles between triangles whose edge and edge, edge and vertex, or vertex and vertex meet each other are calculated.

【Claim 3】

The method of claim 1, wherein:

10 in step c), the angles are calculated using angles between normal vectors of the adjacent triangles.

【Claim 4】

The method of claim 1, further comprising:

15 after step e),
checking a secondary moving available area by setting the robot to have a predetermined size, moving the robot in the moving available areas, and then by defining an area where the robot does not intersect with the moving surface as a moving available area.

【Claim 5】

20 A robot that stores a program for executing the method for checking a moving available area of a robot on a moving surface of any one of claims 1 to 4

or moves on a moving surface by being controlled by an external device that stores the program.

【Claim 6】

- 5 A computer-readable recording medium that stores a program for executing the method for checking a moving available area of a robot on a moving surface of any one of claims 1 to 4.