

[Claims]

Claim 1:

In a gait generation device for a legged mobile robot comprising a body and a plurality of legs connected thereto:

- a. a setting means for virtually setting a third surface and a target position of the Zero Moment Point (ZMP) of the robot when a planned walking surface for the robot includes at least two surfaces, a first surface and a second surface; and
- b. a gait determination means for determining the robot's gait such that the ZMP position obtained from dynamics matches the set ZMP target position;

wherein the setting means is configured to set the ZMP target position so as to continuously move along a line segment connecting two points on the first and second surfaces, and to set the third surface so that its normal vector continuously changes from the normal vector of the first surface to that of the second surface while always including the ZMP target position.

Claim 2:

In a gait generation device for a biped legged mobile robot comprising a body and two legs connected thereto:

- a. a setting means for assuming a virtual third surface that continuously changes from the first surface contacted by the first foot sole at the tip of one leg during a single-leg support phase, through a double-leg support phase, to the second surface contacted by the second foot sole at the tip of the other leg during the subsequent single-leg support phase, when a planned walking surface includes at least two surfaces, a first surface and a second surface, and for virtually setting a target position of the ZMP of the robot on this third surface; and
- b. a gait determination means for determining the robot's gait such that the ZMP position obtained from dynamics matches the set ZMP target position;

wherein the setting means is configured to set the ZMP target position so as to continuously move along a line segment connecting two points on the first and second surfaces, and to set the third surface so that its normal vector continuously changes from the normal vector of the first surface to that of the second surface while always including the ZMP target position.

Claim 3:

The gait generation device for a legged mobile robot according to claim 2,
wherein the setting means is configured to set the ground reaction force center of pressure point for each of the first and second foot soles on the first and second surfaces, respectively, and to set the ZMP target position so as to continuously move along a line segment connecting

the center of pressure points of the first and second foot soles.