[Scope of Claims]

[Claim 1]

In a posture control device for a legged mobile robot comprising at least a body and a plurality of links connected to the body,

(a) a target gait setting means that sets a target gait of the robot, including at least a motion pattern comprising a target trajectory of at least the body, a target trajectory of a ground reaction force acting on the robot, and a target trajectory of external forces other than the ground reaction force acting on the robot;

(b) an external force detection means that detects external forces other than the ground reaction force;

(c) an external force deviation calculation means that calculates a deviation between the detected external force and the target external force other than the ground reaction force;

(d) a model that represents the relationship between a perturbation of the ground reaction force and at least one of the perturbation of the center of gravity position or the body position of the robot;

(e) a model input amount calculation means that calculates a model input amount to be input into the model based at least on the calculated external force deviation;

(f) a body target trajectory correction amount calculation means that inputs the calculated model input amount into the model, and calculates a correction amount for the body target trajectory according to the perturbation amount of at least the center of gravity position or the body position obtained therefrom;

(g) a ground reaction force target trajectory correction amount calculation means that calculates a correction amount for the target trajectory of the ground reaction force in accordance with at least the calculated model input amount; and

(h) a joint displacement means that displaces joints of the robot based on at least the calculated correction amount of the body target trajectory and the ground reaction force target trajectory,

wherein the posture control device for a legged mobile robot is characterized by comprising the above.

[Claim 2]

The posture control device for a legged mobile robot according to claim 1,

wherein the model input amount calculation means includes:

(j) a balanced center of gravity perturbation amount calculation means that calculates a perturbation amount of the center of gravity position that is statically balanced with the

external force,

and the model input amount is calculated so that the model converges to the calculated balanced center of gravity position.

[Claim 3]

The posture control device for a legged mobile robot according to claim 1 or 2, wherein the model approximates the robot as an inverted pendulum.

[Claim 4]

The posture control device for a legged mobile robot according to claim 2 or 3, wherein the balanced center of gravity perturbation amount calculation means includes: (k) a limiter that limits the calculated perturbation amount of the balanced center of gravity position within a predetermined range.

[Claim 5]

The posture control device for a legged mobile robot according to any one of claims 1 to 4, wherein the ground reaction force target trajectory correction amount calculation means includes a limiter that limits the calculated correction amount within a predetermined range.

[Claim 6]

The posture control device for a legged mobile robot according to any one of claims 1 to 5, wherein the target trajectory of the ground reaction force includes at least a trajectory of a target center point of the ground reaction force acting on the robot.

[Claim 7]

The posture control device for a legged mobile robot according to claim 6, wherein the ground reaction force target trajectory correction amount calculation means calculates the correction amount so that it dynamically balances with the moment around the target center point of the ground reaction force, based on a value obtained by subtracting the external force deviation from the model input amount.

[Claim 8]

The posture control device for a legged mobile robot according to any one of claims 1 to 7, wherein the external force other than the ground reaction force is a reaction force from a work object acting on the robot via the links.

[Claim 9]

The posture control device for a legged mobile robot according to any one of claims 1 to 7, wherein the robot is a legged mobile robot comprising two leg links and two arm links connected to the body.

[Claim 10]

In a posture control device for a legged mobile robot comprising at least a body and a plurality of links connected to the body,

(a) a target gait setting means that sets a target gait of the robot including at least a motion pattern comprising a target position of at least the body and a trajectory of a target center point of the ground reaction force acting on the robot;

(b) an object reaction force detection means that detects a reaction force from a work object acting on the robot via the links;

(c) an object reaction force moment conversion means that converts the detected object reaction force into a moment about the target center point;

(d) a robot position and posture correction means that corrects the ground reaction force moment about the target center point and the position and posture of the robot to dynamically balance with the converted object reaction force moment; and

(e) a joint displacement means that displaces the joints of the robot based on the corrected ground reaction force moment about the target center point and the robot's position and posture,

wherein the posture control device for a legged mobile robot is characterized by comprising the above.

[Claim 11]

In a posture control device for a legged mobile robot comprising at least a body and a plurality of links connected to the body,

(a) a target gait setting means that sets a motion pattern including at least a target position of the body;

(b) an object reaction force detection means that detects a reaction force from a work object acting on the robot via the links;

(c) an object reaction force moment conversion means that converts the detected object reaction force into a moment about a predetermined point;

(d) a robot position and posture correction means that corrects the ground reaction force moment about the predetermined point and the position and posture of the robot to dynamically balance with the converted object reaction force moment; and (e) a joint displacement means that displaces the joints of the robot based on the corrected ground reaction force moment about the predetermined point and the robot's position and posture,

wherein the posture control device for a legged mobile robot is characterized by comprising the above.