[Claims]

Claim 1:
An attitude stabilization control device for a legged mobile robot of a model-following type, comprising at least a dynamic model that receives as input a target value comprising at least one of a target operational quantity including force, moment of force, and point of application of force, and a target external force, and outputs a target behavior of the legged mobile robot to be controlled so as to satisfy the target value;
wherein the device is characterized in that at least an amount of correction of the target value corresponding to a deviation in state quantities of posture of the robot and the dynamic model is additionally input into the dynamic model to modify the dynamic behavior of the dynamic model.

Claim 2:
An attitude stabilization control device for a legged mobile robot of a model-following type, comprising at least two models of the controlled system;
wherein the device is characterized in that operational quantities corresponding to at least one of a deviation in posture state quantities between the model and the robot, and a deviation in posture state quantities between the models are fed back to at least one of the models to correct the behavior of the model so that any of the deviations converge to zero.

Claim 3:
An attitude stabilization control device for a legged mobile robot of a model-following type, comprising at least one model of the controlled system;
wherein the device is characterized in that operational quantities corresponding to at least a deviation in posture state quantities between the model and the robot are distributed to both the model and the robot and fed back to correct the model behavior so that the deviation converges to zero.

Claim 4:
An attitude stabilization control device for a legged mobile robot of a model-following type, comprising at least one model of the controlled system;
wherein the device is characterized in that target values of external forces including ground reaction force given to at least the model are corrected in accordance with a deviation in posture state quantities of the robot relative to the model, and the gait of the model is corrected to satisfy the corrected target values so that the deviation converges to zero.

Claim 5:
An attitude stabilization control device for a legged mobile robot of a model-following type, comprising at least one model of the controlled system;
wherein the device is characterized in that operational quantities corresponding to at least a deviation in posture state quantities between the model and the robot are distributed to both the model and the robot and given thereto, and target values of external forces including ground reaction force are corrected, and the gait of the model is corrected to satisfy the corrected target values so that the deviation converges to zero.

Claim 6:
In an attitude stabilization control device for a legged mobile robot, comprising:
a. at least one perturbation dynamic model that simulates the relationship between behavior perturbations from a reference gait in which external forces including ground reaction force are designed to ensure ground contact based on a dynamic model of the robot, and perturbations of the external forces including ground reaction force;
b. a geometric model representing the structure of the robot;
c. detection means for detecting at least posture state quantities of the robot;
d. means for calculating deviations between the geometric model and the detected state quantities of the robot; and
e. means for applying external forces including ground reaction force to at least the perturbation dynamic model so as to reduce the calculated deviations, thereby modifying the reference gait on the geometric model according to the displacement generated in the perturbation dynamic model, and making the robot follow the modified joint displacements of the geometric model as target joint displacements.

Claim 7:
The attitude stabilization control device for a legged mobile robot according to any one of Claims 1 to 6, wherein at least gait parameters such as landing positions are corrected to stably maintain the posture of the model.

Claim 8:
The attitude stabilization control device for a legged mobile robot according to any one of Claims 1 to 7, wherein inputs to the model are determined in accordance with at least the deviations and the behavior of the model.

Claim 9:

The attitude stabilization control device for a legged mobile robot according to any one of Claims 1 to 8, wherein gait parameters such as landing positions are corrected, and new external forces including ground reaction force are applied to the model to stably maintain the posture of the model.