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(54) Title: OMNIDIRECTIONAL WHEELED HUMANOID ROBOT BASED ON A LINEAR PREDICTIVE POSITION AND VELOCITY CONTROLLER

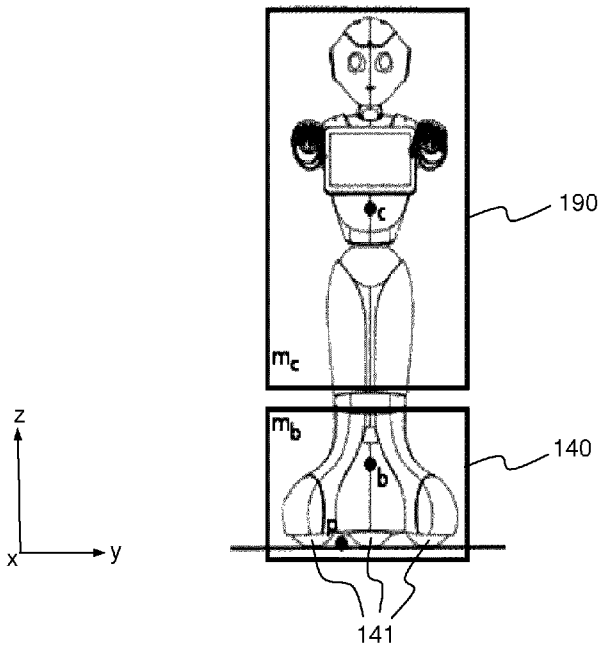

FIG.3

(57) Abstract: The object of the invention is a humanoid robot (100) with a body (190) joined to an omnidirectional mobile ground base (140), and equipped with: - a body position sensor and a base position sensor to provide measures, - actuators (212) comprising at least 3 wheels (141) located in the omnidirectional mobile base, - extractors (211) for converting the measures into useful data, - a controller to calculate position, velocity and acceleration commands from the useful data using a robot model and pre-ordered position and velocity references, - means for converting the commands into instructions for the actuators, characterized in that the robot model is a double point-mass model, and in that the commands are based on a linear model predictive control law with a discretized time according to a sampling time period and a number of predicted samples, and expressed as a quadratic optimization formulation with: - a weighted sum of objectives, - a set of predefined linear constraints.

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