
INVESTIGATING DYNAMICS OF THE DENDRIFORM EXECUTIVE MECHANISM OF A SIX-LEGGED WALKING ROBOT

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Abstract

In this work we offer a kinematic configuration of the dendriform executive mechanism of the six-legged walking robot. We consider the mathematical models of its executive mechanism kinematics and dynamics. The article introduces the values of the modified Denavit—Hartenberg parameters and the reachability matrix of the executive mechanism segments and vector Z characterizing the spatial layout of the kinematic pairs' axes of rotation. The equations of motion are obtained by means of the d'Alembert's principle. We provide the results of investigating the dynamics of the six-legged walking robot executive mechanism. The 3D-model of the six-legged walking robot executive mechanism was developed using the software package SolidWorks, and the dependencies of the moment and capacity concatenations on the time were constructed by means of MATLAB.

Keywords

Six-legged walking robots, synthesis of the kinematic structure, modified Denavit—Hartenberg coordinates systems, reachability matrix, equation of motion for the six-legged walking robot executive mechanism, mathematical modeling

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