STRUCTURAL DESIGH AND MOTION ANALYSIS OF UNIVERSAL MOBILE QUADRUPED ROBOT

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Abstract- According to bionics and simplified octopus structure, this paper designed a universal mobile quadruped robot and adopted Denavit-Hartenberg system to analyze the single leg kinematics of a robot, obtaining its kinematics equation. Also, through the method of separating variables, this paper solved its inverse kinematics and got the joint angle. A walking gait is planned and the joint angle of vertical pendulum stance phase and swing phase of the robot in walking are calculated. MATLAB is used to simulate the relevant joint angles of the robot, so as to analyze its movement change. Experimental results further verified the universal motion of robots.

Index terms*: **Universal motion, quadruped robot, kinematics, inverse kinematics, gait planning.**