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Modeling and Simulation of the Tripod Gait of a Hexapod Robot

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Abstract : Hexapod legged robot’s missions, particularly in irregular and dangerous areas, require high stability and high precision. In this paper, we consider the rectangular architecture body of legged robots with six legs distributed symmetrically along two sides, each leg contains three degrees of freedom for greater mobility. The aim of this work is planning tripod gait trajectory, based on the computing of the kinematic model to determine the joint variables in the lifting and the propelling phases. For this, appropriate coordinate frames are attached to the body and legs in order to obtain clear representation and efficient generation of the system equations. A simulation in MATLAB software platform is developed to confirm the kinematic model and various trajectories to the tripod gait adopted by the hexapod robot in its locomotion.

Keywords : hexapod legged robot, inverse kinematic model, simulation in MATLAB, tripod gait
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