

Force threshold-based omni-directional movement for hexapod robot walking on uneven terrain

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ABSTRACT

This paper presents a control strategy for improving the performance of hexapod robot walking on uneven terrain using the combination of designed force threshold-based foot motion and center-of-body (CoB) based omni directional movement. According to the several studies on omni directional movement for legged robot, most of the proposed methods are targeting to avoid the unnecessary uneven ground surfaces and obstacles other than energy efficiencies. Therefore with the proposed method, the main target of study is to overcome the hexapod walking and stepping on the uneven terrain with multi-directional movements. This proposed combination method is done to guarantee the stability of the robot and increasing the flexibility of the robot during rotating and zigzagging on uneven terrain. The model platform for the study is based on hydraulically driven hexapod robot model system named COMET-IV and verified using real-time simulation with a 3D simulator.

KEYWORDS:

Force Threshold-Based Foot Motion; Cob-Based Omnidirectional; Uneven Terrain

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