عنوان مقاله:

A Quasi-Closed Solution Method for Computing the Forward Kinematics of a Redundant Parallel Manipulator

محل انتشار:

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خلاصه مقاله:

In this paper, a quasi-closed solution method is presented to solve the forward kinematics of a three DOF actuator redundant hydraulic parallel manipulator. It is shown, that on the contrary to series manipulators, the forward kinematic map of the parallel manipulators involves highly coupled nonlinear equations, which are almost impossible to solve analytically. The proposed method uses a combination of analytical and numerical schemes to solve the problem. A simulation study is performed using a sample trajectory to identify the advantages and disadvantages of the proposed method in computing the forward kinematic map of the given mechanism. The results show that the proposed method provides us with a relatively fast solution and good tracking performance although being dependent on the initial conditions used in the solution process.

کلمات کلیدی:

Parallel Manipulator, Forward Kinematics, Optimization, Numerical Solution, Closed-form Solution

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