عنوان مقاله:

A GA Optimized Bi-Level Tuning Fuzzy Controller for a Planar 3-RRR Parallel Manipulator

محل انتشار:

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خلاصه مقاله:

This paper illustrates an application of intelligent control for a planar 3-RRR parallel manipulator. Unlike control of serial manipulators that has been vastly addressed in scientific literature, control of parallel manipulators has been only addressed by few. A GA optimized bi-level tuning fuzzy PD controller is designed here to control the manipulator. In order to consider the maximum allowable torque applied to motors, the maximum torque is assumed to be the same for both controllers. A bi-level tuning method is used for tuning the fuzzy controller. In the first level, the f uzzy PD controller's normalizing parameters are determined similar to a linear PD controller. In the second level, other parameters of the fuzzy controller are tuned using genetic algorithms. This fuzzy PD controller is compared by a simple linear PD controller. natural orthogonal compliment (NOC) method is used to simulate dynamics of the manipulator. Results indicate that the fuzzy PD controller has better performance over linear PD controller.

کلمات کلیدی:

RRR parallel manipulator, fuzzy control, genetic algorithms, Model-free control-3

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