

عنوان مقاله:

Comparison QFT Controller Based on Genetic Algorithm with MIMO Fuzzy Approach in a Robot

محل انتشار:

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خلاصه مقاله:

In this paper, a practical method to design a robust controller for a two-arm manipulator using Quantitative Feedback Theory (QFT) using GA is proposed. Robot manipulators have multivariable nonlinear transfer function, implementation of QFT technique requires first to convert its nonlinear plant into family of linear and uncertain plant sets and then an optimal robust controller will be designed for each set. In order to illustrate the utility of our algorithm we present the application of it to a two degree of freedom robot arm manipulator. In the presented method the controller is designed directly by choosing and optimization of coefficients of transfer function by using genetic algorithm. In optimization procedure, stability and bounds of the system were considered as the constraints of the problem. Non-linear simulations on the tracking problem are performed and the results highlight the success of the designed controllers. The results indicate that applying the proposed technique successfully overcomes the obstacles to robust control of non-linear a robot. Lastly designed controller with QFT method is compared with Fuzzy controller and it is shown that QFT technique suggests a controller which has a better control performance

کلمات کلیدی:

Two Arm Manipulators, Fuzzy Controller, QFT Controller, Genetic Algorithm

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