

Virtual reality trajectory of modified PUMA 560 by hybrid intelligent controller

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Abstract:

The high performance is a goal for all designers to get better, faster, or more efficient than others. This paper proposes a design for virtual reality (VR) of modified PUMA 560 by hybrid controller between adaptive neuro fuzzy inference system (ANFIS) controller and fractional order proportional, integral, derivative (FOPID) controller. The main purpose is to obtain the optimal trajectory by get the best value of controller's parameters that regulate the manipulator movements smoothly to the desired target. The procedure of design start by obtains the optimal values of the traditional PID controller parameters normally. The next step is applied the FOPID controller with high accuracy. It is high performance to control the perplexing physics system than, the classical integer order of PID controller. The final step to get high performance of the control system under considers is achieved by hybrid between FOPID with ANFIS controller which used the pervious output as predictive point. The whole proposed hybrid controller model was simulated and reproduction by MATLAB Version 2019b and Robotic system Toolbox 9. The optimal design of this controller is applied with 3D model of modified PUMA 560 which design by using VR technique under MATLAB/Simulink..