DYNAMIC BEHAVIORS OF A SINGLE FLEXIBLE LINK MANIPULATOR UNDER DIFFERENT DRIVING RULES

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Abstracts:

In this article, nonlinear dynamic modeling and investigation into the effects of different driving rules on dynamic behavior of a single flexible link manipulator are presented. Dynamic equations are derived from finite element method based on Lagrange approach. The effects of elastic displacements on robot motion make dynamic modeling and control become complicated by highly nonlinear characteristics. Besides, most studies have not clearly determined driving rule or the reason why the driving rule is selected. The results have important meanings to select reasonable driving rule for single flexible link manipulator with payload or not. Dynamic behavior of the system are simulated like a specific example on Matlab/Simulink software.

Key words: Flexible link manipulator; Nonlinear dynamic; Elastic displacements; Driving rules; Dynamic behaviors.