عنوان مقاله:

Observer Based Composite Control of Singularly Perturbed Flexible Link Robot Arm

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خلاصه مقاله:

In this paper, a composite control of flexible link manipulator is presented. The design is based on singular perturbation method which decomposes the system to two separate reduced order subsystems. The first is a slow subsystem that is known as rigid manifold and the second is a fast subsystem which is known as elastic manifold. Slow sub-controller is designed according to computed torque method (CTM). Then,due to impossibility of measuring the elastic state variables, an observer is designed to estimate the fast subsystem states which may be available in state feedback controller. The fast sub-controller suppresses vibrations of the flexible link. Finally, simulation results are presented which show the effectiveness of the method and achieve good trajectory tracking.

کلمات کلیدی:

Flexible link arm, Observer, Assumed mode, Singular perturbation, Composite control

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