论文

混合输入五杆机构实现给定轨迹的功率分配

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摘要：

混合输入五杆机构是一种新型的可控机构,采用恒速电机和伺服电机作为驱动元,两种类型的运动通过一个五杆机构复合后,可得到柔性输出运动.通过对混合输入五杆机构的工作空间的研究,对该机构实现给定轨迹进行了逆运动学和动力学分析,得到了电动机功率计算的数学模型.为了实现对连续时变轨迹的跟踪任务,该系统采用PD控制算法对伺服电动机的运动进行控制.对混合输入五杆机构实现直线轨迹和抛物线轨迹进行了仿真研究,得出了机构在实现给定轨迹时电动机功率分配的规律.

关键词： 混合驱动机构   轨迹实现   功率分配

Power distribution of a given trajectory generation for a hybrid-driven five-bar mechanism

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Abstract:

A hybrid-driving five-bar linkage mechanism is a new type of mechanism. The hybrid mechanism is a configuration combining the motions of two characteristically different electric motors by means of a five-bar mechanism to produce programmable output. Based on the study of the workspace of a hybrid-drive five-bar mechanism, the analysis of inverse kinematics and dynamics of the mechanism was developed, and a mathematical model of power calculation was obtained. In order to perform time-variety successive trajectory tracking, the PD control algorithm was applied to control the servo motor. The trajectory generation such as beeline and parabola was simulated with Matlab, and then the law of power distribution of trajectory generation was obtained.

Keywords: hybrid-driven mechanism   trjectory generation   power distribution

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