

Task Space Synchronization Control of Multi-Robot Arms with Position Synchronous Method

Authors : Zijian Zhang, Yangyang Dong

Abstract : Synchronization is of great importance to ensure the multi-arm robot to complete the task. Therefore, a synchronous controller is designed to coordinate task space motion of the multi-arm in the paper. The position error, the synchronous position error, and the coupling position error are all considered in the controller. Besides, an adaptive control method is used to adjust parameters of the controller to improve the effectiveness of coordinated control performance. Simulation in the Matlab shows the effectiveness of the method. At last, a robot experiment platform with two 7-DOF (Degree of Freedom) robot arms has been established and the synchronous controller simplified to control dual-arm robot has been validated on the experimental set-up. Experiment results show the position error decreased 10% and the corresponding frequency is also greatly improved.

Keywords : synchronous control, space robot, task space control, multi-arm robot

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