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Kinematics Analysis and Trajectory Validation of Two Cooperative Manipulators Handling a Flexible Beam (Conference Paper)

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Abstract

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Kinematics and a trajectory are necessary for dynamics modelling and control design of two cooperative manipulators in handling a flexible beam. Lack of information regarding the kinematics and the trajectory of a system can lead to inaccuracy and infeasibility results of the simulation and the experiment. This paper presents kinematics analysis and trajectory validation of two cooperative manipulators handling a flexible beam. The kinematics of the system and the desired trajectory is validated by using Simulink and geometrically visualised by using GeoGebra. Simulation results showed that joint angles and the manipulators' configuration were influenced by some parameters such as the positions and the orientation of beam's midpoint, the base distance between two manipulators, the manipulators' elbow-typed configuration as well as the radius and the centre point of the circular desired trajectory . © 2019 IEEE.

SciVal Topic Prominence ⓘ

Topic: Manipulators | Robots | Control scheme

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Indexed keywords

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Engineering uncontrolled terms

Cooperative manipulator Desired trajectories Dynamics modelling Flexible beam Forward and inverse kinematics Joint angle Kinematics analysis Simulink

Engineering main heading:

Trajectories

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