The direct strain feedback with PID control approach for a flexible manipulator: Experimental results

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ABSTRACT
Flexible manipulator (FM) is a robotic arm that can accomplish different tasks and the arm is a lightweight type, which means at least one dimension of their cross section is relatively small compared to their length. This project presents the development of direct strain feedback (DSFB) with PID controller for vibration control of a FM system. Strain gauge is the main sensor used as a strain measurement for giving a feedback to the system. The strain measurement also has been used as a displacement sensor at the endpoint of the link. The displacement was used to observe the performance of the system. The performances of the controllers are assessed in terms of the input tracking capability (desired position) and vibration reduction as compared to original system. Finally, the DSFB with PID has been implemented to achieve the desired performance.

KEYWORDS:
DSFB; Flexible Manipulator; MATLAB/Simulink; PID controller; PID Tuning

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