

Kanokrat Sae-heng 2011: Real-Time Reference Position Shaping to Reduce Vibration in Slewing of a Flexible-Joint. Master of Engineering (Mechanical Engineering), Major Field: Mechanical Engineering, Department of Mechanical Engineering. Thesis Advisor: Assistant Professor Withit Chatlatanagulchai, Ph.D. 70 pages.

A very-flexible-joint robot is a manipulator in which soft spring is intentionally placed at its joint to reduce damage if collision. Despite the benefit, slewing of this robot is less accurate because of the link vibration.

The convolution between the reference position and a properly designed impulse sequence produces an input that cancels residual vibration resulting in smoother robot moves. The convolution can be done in real time; the technique is then suitable for human-operated machine such as construction crane and tele-operated boom.

In this paper, we apply this technique to a laboratory-scale human-operated very-flexible-joint robot with great vibration-attenuated result

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