

Implementation of Conventional and Neural Controllers Using Position and Velocity Feedback

Abstract

By:
Christopher Spevacek
And
Manfred Meissner

The project objective was to investigate and compare different algorithms for the calculations of the velocity from position information. The best algorithm was applied to a small robot arm system which consists of a controller (PC software), analog-to-digital and digital-to-analog converter PC card, power amplifier, DC motor, gear train, and external load. In robotic systems a velocity calculation is difficult or impossible to implement because of noise. A neural network will be used to filter the noise from the position data before calculating velocity. The controllers that were implemented were a proportional controller, a feed-forward controller, and a two-loop controller consisting of the velocity algorithm and neural network filter. Experimental results show the benefits of our neural two-loop controller.