A Multilayered Neural Network Adaptive Controller for Robot Manipulators

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Abstract

The purpose of this work is to show how a fixed gain feedback controller and a set of neural networks can be combined to construct a robust controller that will be insensitive to the payload variations and the model dynamics uncertainties. This controller will be applied to the three main articulations of a PUMA 560 manipulator arm. The role of the neural networks is to compensate the nonlinearities of the manipulator model. The compensation signal, which is a linear combination of the four neural network outputs, is added to a PD controller so that the desired response is obtained.

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