Abstract

The paper presents a new design of adaptive and dynamic neural network-based controller architecture with feedback connection for non-linear multivariable systems. The network is trained on-line at each sampling interval using the desired output trajectory and the training method used is the Real Time Recurrent Learning Algorithm (RTRL). The recurrent network is a fully connected one, with feedback from output layer to the input layer through a delay element. Since the synaptic weights to the neurons are adjusted on-line, this controller has potential applications in real time control also. Moreover, it can be used for both continuous and discrete systems. The simulation results obtained by applying the algorithm to a non-linear multivariable system demonstrate the effectiveness of the proposed method.

Reference

Nonlinear Multivariable Systems Using Neural Networks and Approximate Models., Jounal of applied sciences


Index Terms

Power Electronics

Multivariable Systems

Key words

Artificial Neural Network (ANN)
Non-linear Control

Multivariable System

Real Time Recurrent Learning Algorithm (RTRL)