

Abstract

As the need for feedback control is extended to systems of increasing complexity, which are often highly nonlinear, the need to drive a plant model that is adequate over all the operating conditions becomes more challenging task.

Neural networks which has the ability to learn linear functions, has been used for linear system identification. A general identification procedure is developed with the attention drawn to the identification of recurrent neural network models for linear systems.

In this project Recurrent Neural Networks (RNNs) are used to identify second order systems, “under damped, critical damped, over damped, and non-minimum phase systems”, and also for third order systems.

Genetic Algorithms (GAs) has been used for the training of the RNN in all the cases.

Computer simulations, based on the recurrent neural network models, are carried out to verify the performance of these systems. The simulation showed good results.