The Egyptian International Journal of Engineering Sciences & Technology, Vol 10, No 1 (2006)

ADAPTIVE CONTROL OF CHEMICAL REACTOR USING NEURAI NETWORKS

ffg areed, HANY ABDELFATTAH

Abstract

Control strategies based on nonlinear process models can provide the potential for significant improvement over 1 inear c ontroliers f or n onlinear processes. An adaptive neural network is applied to a rauitivariable chemical reactor. The first stage of tlie project, simulation study, has been investigated and is presented in tliis paper. A radial basis function network is developed to model the real process, and its weights are on¬ line updated using a self organizing-map (kohonen algorithm). Design of a Proportional-Integral-Derivative (PID) linear controller for a chemical process is presented. Comparison between PID controller and a neural network-based kohonen algorithni controller are illustrated by the simulation results. Results ﷺowed tlie proposed technique controller that .induce a linear response, in input-output sense and that the nonlinear controller can be easily tuned.