Abstract

In this paper, the Fusion of neural and fuzzy Systems will be investigated. Membership Function Generation and its mapping to Neural Network are introduced. System modeling based on conventional mathematical tools (differential equations) is not well suited for dealing with ill-defined and uncertain systems. By contrast, a fuzzy inference system employing fuzzy if-then rules can model the qualitative aspects of human knowledge and reasoning process without employing precise quantitative analyses. An adaptive network fuzzy inference system (ANFIS) is introduced, and Multiple Inputs /Outputs Systems (Extended ANFIS Algorithm) is implemented. A Modification algorithm of ANFIS, Coupling of ANFIS called coactive neuro fuzzy system (CANFIS), is introduced and implemented. The software of the modified algorithm of MIMO model identification is built and generated by me or added as a toolbox to matlab. To test the validity of the modified algorithm ANFIS (CANFIS algorithm), a coupled inputs-outputs example is simulated from the numerical equation. The result of modified algorithm (CANFIS) showed a conformance with the simulated example and the root mean square (RMSE) is very small.

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Index Terms

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Keywords

Nonlinear System  Fuzzy Inference System  ANFIS  Neural Network