



## **A MODIFIED GENETIC ALGORITHM FOR TRAINING ADAPTIVE FUZZY SYSTEMS**

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**ABSTRACT**—Adaptive Fuzzy Logic Systems trained by genetic evolution of their parameters are presented in this work. This technique is based on the aggregation of parameter perturbations. Neither the evaluation function nor the membership functions, have to be differentiable as required in most optimization techniques. In the classical Genetic Algorithms, the solution space of each parameter should be specified in the genetic search. The proposed technique does not specify the solution space of the parameters of the fuzzy logic system. It specifies the ranges of the perturbations of the parameters which will aggregate to find the optimum parameters for the Fuzzy Logic System. Computer simulation showed that the proposed technique reached an optimal solution for the Adaptive Fuzzy Logic parameters with a higher convergence rate than that of the classical GA.

**Key Words:** Genetic Algorithms, Adaptive Fuzzy Systems, Parameter perturbations