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AIRS-GA: A hybrid deterministic classifier based on artificial immune recognition system and genetic algorithm

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Abstract

For many engineering and decision-making problems, a deterministic model is more suitable than a stochastic one. In fact, in domains like medicine, security, military, etc., decision makers require to utilize models that, for the same input parameters (i.e. factors), provide the same output(s) (i.e. risk-free outcome(s)). The Artificial Immune Recognition System (AIRS); an immune system-inspired classifier, is one such stochastic method. In this paper, we propose AIRS-GA: a hybrid approach based on AIRS and a deterministic version of the Genetic Algorithm (GA). This hybridization lets AIRS develop its memory cells in a deterministic way. Experiments carried out on real datasets obtained from the U.C.I. machine learning repository showed that AIRS-GA often outperforms the original AIRS2 in terms of classification accuracy and time. © 2017 IEEE.

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