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Article

Using optimization techniques in Grammatical Evolution

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Abstract: The Grammatical Evolution technique has been successfully applied to a wide range of problems in various scientific fields. However, in many cases, techniques that make use of Grammatical Evolution get trapped in local minima of the objective problem and fail to reach the optimal solution. One simple method to tackle such situations is the usage of hybrid techniques, where local minimization algorithms are used in conjunction with the main algorithm. However, Grammatical Evolution is an integer optimization problem and, as a consequence, techniques should be formulated that are applicable to it as well. In current work, a modified version of the Simulated Annealing algorithm is used as a local optimization procedure in Grammatical Evolution. This approach was tested on the Constructed Neural Networks and a remarkable improvement of the experimental results was shown, both in classification data and in data fitting cases.

Keywords: Grammatical Evolution; Optimization techniques; Neural networks; Evolutionary techniques; Stochastic methods.

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