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Article

Bounding the limits of the Grammatical Evolution method with application to feature construction

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Abstract: A multitude of real-world problems can usually be expressed as data classification or data fitting problems. A technique that has been experimentally found to achieve good recognition results in such problems is the technique of feature construction with the incorporation of Grammatical Evolution. However, in Grammatical Evolution, the chromosomes can initialized in wide value intervals, which can lead to a decrease in the efficiency of the feature construction technique. In this paper, a technique for discovering appropriate intervals for the initialization of chromosomes is proposed using partition rules guided by a genetic algorithm. After successfully finding a promising interval, the feature construction technique is applied and the chromosomes are initialized within that interval. This technique was applied to a number of known problems in the relevant literature and the results were extremely promising.

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

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