

ملخص البحث رقم (٣)

ملخصات الأبحاث المقدمة من الدكتورة / هالة عبد الحميد مصطفى للترقية الى درجة استاذ مساعد

تخصص نظم المعلومات والمقدمة إلى اللجنة العلمية الدائمة للحاسبات و المعلومات

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English Abstract	<p>Feature selection is an important step in different applications such as data mining, classification, pattern recognition, and optimization. Until now, finding the most informative set of features among a large dataset is still an open problem. In computer science, a lot of metaphors are imported from nature and biology and proved to be efficient when applying them in an artificial way to solve a lot of problems. Examples include Neural Networks, Human Genetics, Flower Pollination, and Human Immune system. Clonal selection is one of the processes that happens in the human immune system while recognizing new infections. Mimicking this process in an artificial way resulted in a powerful algorithm, which is the Clonal Selection Algorithm. In this paper, we tried to explore the power of the Clonal Selection Algorithm in its binary form for solving the feature selection problem, we used the accuracy of the Optimum-Path Forest classifier, which is much faster than other classifiers, as a fitness function to be optimized. Experiments on three public benchmark datasets are conducted to compare the proposed Binary Clonal Selection Algorithm in conjunction with the Optimum Path Forest classifier with other four powerful algorithms. The four algorithms are Binary Flower Pollination Algorithm, Binary Bat Algorithm, Binary Cuckoo Search, and Binary Differential Evolution Algorithm. In terms of classification accuracy, experiments revealed that</p>

	<p>the proposed method outperformed the other four algorithms and moreover with a smaller number of features. Also, the proposed method took less average execution time in comparison with the other algorithms, except for Binary Cuckoo Search. The statistical analysis showed that our proposal has a significant difference in accuracy compared with the Binary Bat Algorithm and the Binary Differential Evolution Algorithm.</p>
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