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## **HYBRIDIZING SALP SWARM ALGORITHM WITH SINE COSINE ALGORITHM FOR BIO-MEDICAL PROBLEMS**

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The foremost intention of this article is to develop a newly hybrid powerful meta-heuristic to be integrate the Sine Cosine Algorithm with Salp Swarm Algorithm called HSSA-SCA for the purpose of improved the convergence performance. Firstly, we studied and analyzed the all merits of these algorithms, after that, we presented this approach to enhance the exploration and exploitation performance. The position update equations of Salp Swarm Algorithm has been updated by using position equations of Sine Cosine Algorithm, hence, the best and possible optimal solutions have been tried to updates based on the sine or cosine function. The existing algorithm has been tested on twenty two standard mathematical optimization functions and some engineering applications, to examine and confirm the valuable behaviors in searching the best optimal solutions for optimization functions. The experimental results reveal that, HSSA-SCA

algorithm has achieves the highest accuracies with least runtime in comparison with others. Furthermore, the accuracy of the newly hybrid algorithm has been verified on a five dataset bio-medical functions i.e. i) XOR (ii) Balloon (iii) Breast Cancer (iv) Iris and (v) Heart. For the verification, the experimental solutions of HSSA-SCA algorithm have been compared with comparative algorithms. Basis of these functions we have discussed and identified the reasons for poor and strong accuracy of other algorithms. The optimal solutions of these function revealed that the newly hybrid algorithm provides high competitive solutions in terms of improved local optima avoidance and high level of accuracy in mean, standard deviation, classification and convergence rate as comparison to others.

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