

Dengue Outbreak Prediction Using an Improved Salp Swarm Algorithm

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Abstract:

Dengue disease is the most common type of disease caused by mosquitoes. It is reported that dengue fever was first recognized in Thailand and Philippines in 1950. According to World Health Organization (WHO), dengue is a viral disease that spread in public environment where the number of cases reported in 2010 increased from 2.2 million to 3.2 million in 2015. Until today, numerous studies by researchers to improve the prediction of dengue fever disease based on Computational Intelligence (CI) methods have been reported. The research includes study using Swarm Intelligence (SI) algorithm. In this study, an improved Salp Swarm Algorithm (iSSA) is proposed for dengue outbreak prediction. The original SSA will be enhanced by enriching the exploration and exploitation process for the sake of improving the accuracy of dengue outbreak prediction. This will be done by inducing a mutation based on Levy Flight. Later, the iSSA algorithm will be realized on dengue disease dataset. The proposed iSSA will be compared against the original SSA and another CI method known as Grey Wolf Optimization (GWO). With this proposed algorithm, it is expected to improve the dengue outbreak prediction where MAE and RMSE are two crucial evaluation indicators when smaller the values obtained, more accurate the prediction model.

Keywords: Dengue Outbreak Prediction; Levy Flight; Salp Swarm Algorithm

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