

Implementation of Artificial Fish Swarm Optimization for Cardiovascular Heart Disease

A.M. Barani, R.Latha, R.Manikandan

Abstract: Today we are living in the digital world, with a systematic life, which may leads to many new diseases due to artificial production on agriculture, mental stress, economic and social stress too. Due to machine world, patients hearts diseases can be predict by various heart diseases detection model. There are various techniques, models and tools are predicted to find the real status of heart diseases which may have advantages and disadvantages too. This paper will try to improve the performance of the new proposed techniques which is used to determine the drawback from the existing system and overcome the drawback. The proposed techniques is used to preprocess the information and moved to the next process of selection to determine accuracy, sensitivity, specificity, precision, recall and F-measure from the dataset retrieved from three major metropolitan cities likes Chennai, Bangalore and Delhi. These proposed techniques provide the more efficient and effective with the existing system with 90% to 95%.

Keyword: artificial production, agriculture, mental stress, economic, social stress, patients hearts diseases

I. INTRODUCTION

The term data mining is a sequence of process to obtain knowledge from the very large dataset. These Data Mining process can be implemented by various techniques. (Abhishek, 2013) . In the business society, information digging is utilized for all because of the way that are continued by three methods, for example, information mining, multiprocessing amazing PCs and tremendous information assortment. (Negi, Smita, & Vijay, 2012). Related with different fields has a portion of the particular attributes and applications and medicinal information mining in restorative field plays a significant conceivable outcomes to expanding the obscure data's in the data sets. (Hsieh, 2012). These data sets are used for restorative purposes, for example, clinical analysis and guess. Examination of therapeutic information's has a significant influence and tested task needs to perform successfully and effectively. (Hafez, Mona, 2013). The heart muscle is closed off when more than one coronary supply routes move the blood to the heart muscle. This is called localized necrosis of myocardial. Change of blood (SM & E, 2012) is halted at a certain period, regularly up to 20 mins the supply route may kick the bucket. As of now, the coronary illness (CHD) result rate has been extricated with the improvement of intercessional strategy that creates coronary arteriography (CAG) the "brilliant standard" for CHD result

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II. LITERATURE REVIEW

(Vijayarani & Sudha, 2013) have presented the public health disquiet worldwide for prediction of heart disease. Heart patient's grower quickly owned to bad consumption lifestyles and deficient health awareness. Hence that was necessary to structure that diagnose cardiovascular disease. In that situation, heart rate assessment estimated six mechanical learning techniques as possible. The recital of this technique was assessed on eight diverse types performance indices. Moreover, the performance performance attribute curve was evaluated for those instructions. 85% of the highest classification accuracy, logistical logarithmic system reported 89 and 81% distinctly

(SM & E, 2012) have presented to introducing a group consisting of a novel based on the Advanced Paging Approach with a Multi-Purpose Voting Plan for Inspection and addressing of Heart Disease. The specimen where introduced to violates the limit of the usual process by applying trainees of five data set. (Moos, Stoker, GajenthiranNagan, Weijert, Vemde, & ShandraBipat, 2014) Five different data sets are used for tests, figuring and approve. Databases got from openly accessible information vaults. Contrasted with numerous classifications best looking at the numerous impacts of the proposed gathering. (T & S, 2013) Projections of the proposed gathering test are evaluated by multiple times indicative and ANOVA measurements

III. PROPOSED METHODOLOGY

Naturally choosing is one of the key research regions of the AI space. The significant fascination of highlight determinations is to help lessen the grouping of ideal applicants includes and improve bookkeeping overhead, asset request, and extra room. The most persuasive highlights are chosen all the while, which can comprehend the collaboration between client highlights and classes. So as to forestall highlight for forecast issue, hybridization of fish swarm optimization (FSO). The general design of the proposed expectation technique is given in figure 1. Here, first, we examine the proposed of the FSO calculation.

3.1 Artificial Fish Swarm Optimization

An optimal techniques plays a vital role in Fish Swam Algorithm to gather food by the various categories of Fish which are synthetic.. Artificial fish swarm algorithm depicts fish, hunting and fish behavior to achieve optimum Algorithm has fast integration speed and strong global search capability and strong weakness. The following steps are determined by the Fish Swam Optimization Algorithm

- To determine each and every with their corresponding eligibilities.
- Perform the search for each fish



- c. The behavior of swarming fish
 - d. Run the chase for each fish
- These operations are repeatedly repeated until some stoppages occur as shown in Figure 3.1



Figure 3.1 Process of Artificial Fish Swarm Optimization

3.2 Methodology

This proposed work are classified into three methodologies as shown in the figure 3.2 are as follows

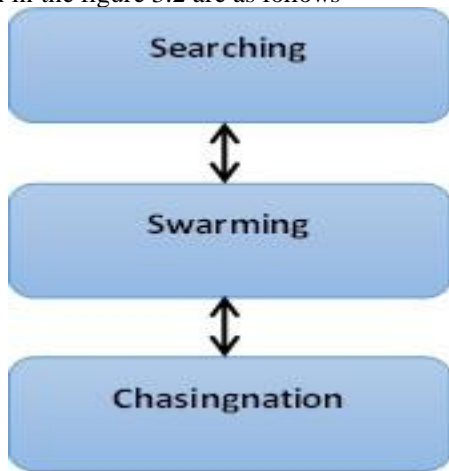


Figure 3.2 Methodologies of AFSSO

Searching Activity:

Each and Every fish find the a particular region which consists of more food. These Fish will go very fast to find the food directly and quickly to those particular regions.

$$S_{i+1} = S_i + q \text{ and } (q1) \frac{S_k - S_i}{\|S_k - S_i\|}, \text{fitness}_j < \text{fitness}_i$$

Swarming Activity

In swarming Action, Swam will Swim naturally ,

$$S_{i+1} = S_i + q \text{ and } (q2)$$

$$S_{i+1} = S_i + q \text{ and } (q1) \frac{S_{cm} - S_i}{\|S_{cm} - S_i\|}, \text{fitness}_i < \text{fitness}_{cm} \text{ and } \left(\frac{m_s}{m}\right) < \delta$$

Chasingaction:

When a fish in the swarm discovers food, after determination of food the others will determine the food dangling.

$$S_{i+1} = S_i + q \text{ and } (q1) \frac{S_{best} - S_i}{\|S_{best} - S_i\|}, \text{fit}_{bt} < \text{fit}_i \text{ and } \left(\frac{m_s}{m}\right) < \delta$$

IV. IMPLEMENTATION

In our paper, we are investigating the result accomplished by applying our exhibited strategy for disentanglement reason our proposed method was applied in the MATLAB stage. The exhibited technique AFSSO performed by windows

machine having Intel Core i5 processor with speed 1.6 GHz and 4 GB RAM. The proposed characterization procedure is analyzed in three datasets, for example, Chennai, Bangalore, and Delhi. These three data sets are acquired from the UCI AI vault

Performance Evaluation are calculated below based on the basic four principles such Specificity, Sensitivity Accuracy

4.1 Specificity

Specificity is termed as the sum of true negative, False Positive divided by True Negative

$$S_p = \frac{T_n}{(T_n + F_p)} \rightarrow 1 \text{ Where } T_n - \text{ True Negative, } F_p - \text{ False Positive}$$

4.2 Sensitivity

Sensitivity is termed as the sum of True positive, False Negative divided by True Positive.

$$S_s = \frac{T_p}{(T_p + F_n)} \rightarrow 2 \text{ Where } T_p - \text{ True Positive, } F_n - \text{ False Negative}$$

4.3 Accuracy

Accuracy can be Calculated as Assessment Divided by Total Number of Assessments

$$A_y = \frac{\text{Correct Assessment}}{\text{Total Assessment}} \rightarrow 3$$

By applying equation 1,2,3 and 4 the following output had been received.

4.4 Precision

Precision Termed as the process of calculating the ratio of true positive divided by the true positive and false positive.

4.5 Recall

Recall is the process of determining the ratio of true positive from the sum of true positive and false negative

4.6.1. F-Measurement

The combination of precision and recall measures are comprises i=a mean value of harmonic is called as F-measure.

$$\frac{(P * R)}{(P + R)} \rightarrow 4$$

From the 4.1 to 4.6 the following output are generated as shown in the table 4.1 as follows

Table 4.1 Proposed AFSSO dataset

Measures	Chennai	Bangalore	Delhi
Sensitivity	0.9878	0.9521	1
Specificity	0.9640	0.9716	0.973
Accuracy	97.68	95.91	97.56
Precision	0.97	0.98	0.72
Recall	0.98	0.95	1
F-Measurement	0.97	0.96	0.84

Table 4.1, are determined by the calculation based on the formula predicted such as sensitivity, Specificity, accuracy, precision, recall and F-measurement.

97.68%, 95.91% and 97.56% are the determined of the three data sets. The affectability estimations of three data sets 0.9878%, 0.9521% and 1%. The dataset values for explicitness are 0.964%, 0.9716%, and 0.973%. The proposed is accomplishes the accuracy and review an

incentive for three dataset is 0.9700%, 0.9835%, 0.7272% and 0.9878%, 0.9521%, 1% individually. F-measure value for the displayed work is 0.9788% for Chennai dataset 0.9675% for Bangalore dataset 0.8421% for delhi data set.

V. CONCLUSION

We conclude that, this proposed article is used to represent the classification of medical data which were retrieved from three different places such as Chennai, Bangalore and Delhi and proved the efficiency based on sensitivity, specificity, accuracy, precision, recall and F-measure. . The testing output shows that our presented proposed technique went better than the accuracy of 97.68%.

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