Data Classification Based on Hybrid Neural Network Model

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ABSTRACT
Information order is an essential branch of information mining and there are distinctive techniques for its usage. Neural network are one of the most ideal courses for grouping in machine learning. Structure and weights of neural network are most critical in their exactness. As of late, because of the deformities in inclination based hunt algorithms in neural network preparing algorithms, meta-heuristic algorithms have been of enthusiasm for analysts. During the time spent preparing weights of a neural network, a particular engineering is normally utilized for the network with a settled number of concealed layers and settled number of neurons in every layer. In this way, overhauling the neural network structure prompts to an advancement issue.

Result shows that the modified SOM algorithm shows better result in comparison of Kant's algorithm. The exiting two algorithms not controlled the level weight of class and loss some data during the grouping of class. The modified SOM algorithm is very efficient for large data classification technique.

Keywords: Neural Network, BBNN, SOM.

INTRODUCTION
Neural system innovation to accomplish human-like execution in the fields of discourse and picture acknowledgment. This is because of its acclaimed capacity to serve as a widespread capacity inexact or for any constant nonlinear capacity in a minimal area. It has been effectively utilized as a part of an extensive variety of uses, for example, back, prescription, designing, topography, material science, and science where factual demonstrating techniques are generally utilized. The decision of a proper engineering of neural system assumes an essential part in its execution expectation. Improvement of neural system weights and design is a mind boggling and imperative undertaking in directed learning process. KH calculation is utilized for advancing the parameters (i.e., weights and inclinations) of the NN [6].

As various structures of neural systems are required for various applications with various qualities, the neural system ought to be outlined in view of the attributes of uses to acquire ideal execution [5], [6]. Despite the fact that neural system itself has preferences in self-adaption, better speculation capacity and capacity to work in loud situations, there still stay a few issues in dealing with the design of the system and quickening the preparation of the system.

Learning or preparing is a standout amongst the most vital issues in neural systems since the ideal arrangement of system parameter is acquired through the learning procedure. To acquire the ideal arrangement of system parameters, diverse back spread calculations, for example, back engendering calculations with variable learning rate [1], and conjugate angle calculation. Be that as it may, those techniques can be effortlessly caught in neighborhood ideal and the subordinate data of mistake capacity is additionally required. To conquer these issues, a worldwide learning streamlining calculation is required.

BBNN is a system outline that is more adaptable for changing the structure contingent upon the flag stream between squares. It can be spoken to by a 2-D exhibit of pieces. Every individual neuron square fills in as a fundamental flag preparing unit that is made out of an encourage forward neural system having four variable information/yield hubs [2]. Inferable from various attributes of neural systems (NNs), a customary neural system with a typical structure will be unable to handle each application. In light of the learning of use, BBNN is chosen as an appropriate classifier because of its measured qualities and capacity in developing the extent of the system by including more fundamental pieces. The structure of the system basically relates to deciding sign streams between every piece.

The rest of paper discuss as in section 2 discuss the polynomial neural network. In section 3 discuss the Problem Formulation. In section 4 discuss proposed Work. In section 5 discuss the experimental result and analysis. finally discuss conclusion & future work in section 5.

2. POLYNOMIAL NEURAL NETWORK
The PNN is self-versatile in nature .The objective of PNN is to concentrate learning from exploratory information and to decide its best scientific portrayal. Its design is like encourage

forward neural systems, whose neurons are supplanted by Polynomial hubs where the execution of every hub is assessed utilizing polynomial capacities. The Output of every hub in a PNN structure is gotten by utilizing a few sorts of high-request polynomials, for example, direct, quadratic, and altered quadratic of the information factors. These polynomials are known as Partial Descriptions (PDs). By and large PNNs have less hubs than Artificial Neural systems (ANN's), however these hubs are more adaptable than that of ANN. The PNN consolidates the benefits of various straight relapse and ANN into a solitary element and can demonstrate both direct and nonlinear connections like ANNs by creating a couple of polynomial relapse conditions for simple elucidation. PNN has numerous parameters viz. number of practical hubs, interlayer weights, PDs, structure sort which are picked ahead of time before design of PNN is developed, and are controlled by experimentation strategy.

3. PROBLEM FORMULATION

Classification and grouting of data is major issue in data mining process. For the classification and grouping of data used various classification algorithm such as statically classification, binary classification, rule based classification and neural network classification technique. The artificial neural network based classification technique is very important area of research. The artificial neural network based classification technique faced a problem of weight adjustment and activation function. For the adjustment of weight and activation function used various heuristic function and optimization technique. The optimization technique used various algorithm such as genetic algorithm, ant colony optimization and many more optimization algorithm. The architectural/topological design of the ANN has become one of the most important tasks in ANN research and application. It is known that the architecture of an ANN has significant impact on a network's information processing capabilities. Given a learning task, an ANN with only a few connections and linear nodes may not be able to perform the task at all due to its limited capability, while an ANN with a large number of connections and nonlinear nodes may over fit noise in the training data and fail to have good generalization ability [1]. Up to now, architecture design is still very much a human expert's job. It depends heavily on the expert experience and a tedious trial-and-error process. Even though ANNs are easy to construct, finding a good ANN structure is a very time consuming process [2]. As there are no fixed rules in determining the ANN structure or its parameter values, a large number of ANNs may have to be constructed with different structures and parameters before determining an acceptable model. Against this background, a logical next step is the exploration of more powerful techniques for efficiently searching the space of network architectures [3].

4. PROPOSED ALGORITHM

In this section discuss the modified algorithm of SOM based on particle swarm optimization technique. SOM is a basically a combination of two dimensional matrix structure of neural network. The property of SOM algorithm based on the similar agent of same domain. The process of vector input selection and proceed the data mapping stage is very complex. Now for the minimization of complex input processing used particle swarm optimization algorithm in data mapping phase in SOM processing of algorithm. The particle swarm optimization selects the map data and transfer into grid for the making of cluster. Here describe the steps of SOM along with particle swarm optimization.

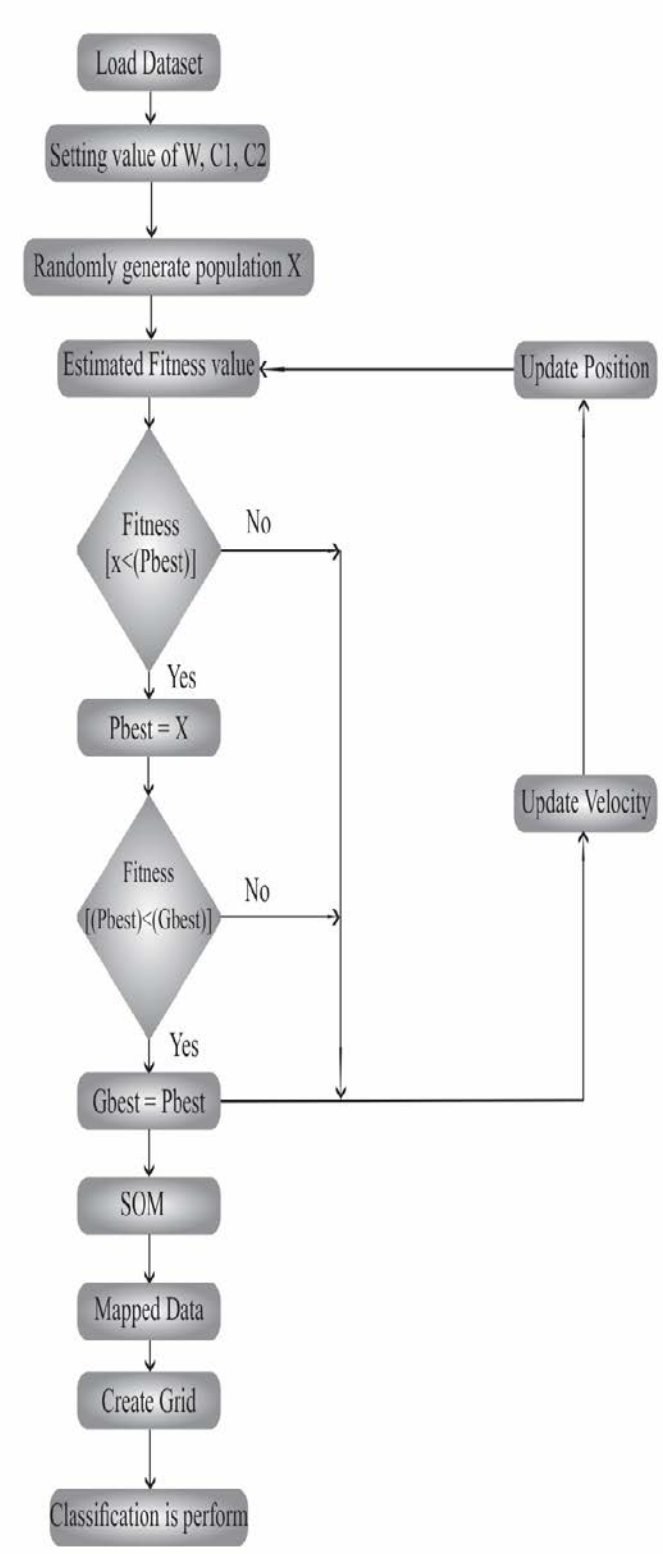

Figure 1: Proposed Model.

5. EXPERIMENTAL RESULT ANALYSIS

To evaluate the performance of proposed method of artificial neural network based classifier for the classification of data used MATLAB software 7.8.0 with a variety of dataset used for experimental task. In this dissertation perform experimental process of proposed structure optimization technique. The proposed method implements in MATLAB 7.14.0.739 and tested with very reputed data set from machine learning research center.

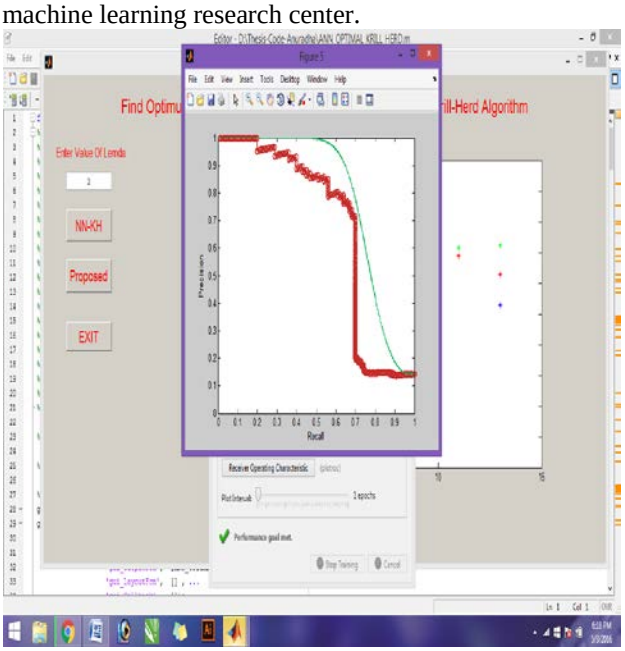

Figure 2: Shows the result window of image with Diabetes and selected input Lemda value 3 for using Kill Herd Algorithm.

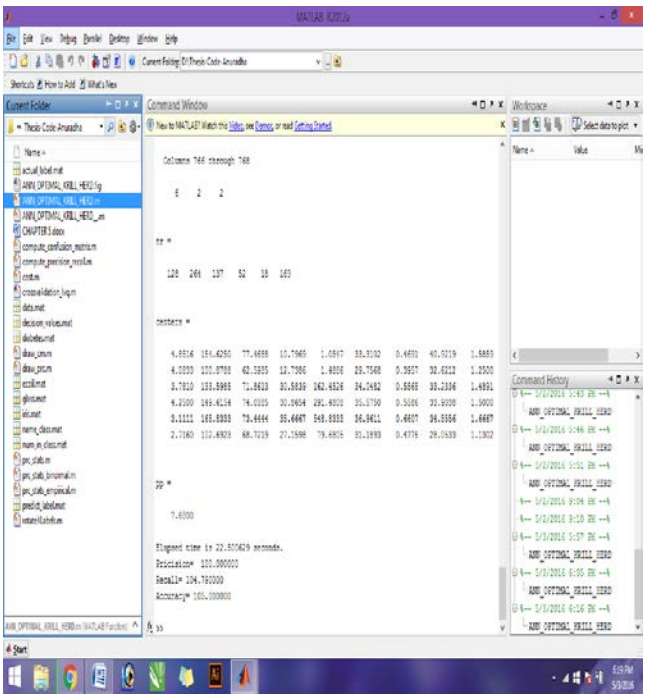

Figure 3: Shows the result window with Diabetes, Pricision and Recall for using Kill Herd Algorithm with input lemda value 3.

Input values	Kill Herd Algorithm			Proposed		
Lemda	Pricision	Recall	Accuracy	Pricision	Recall	Accuracy
3	90.0	94.7	95.0	92.0	89.8	96.0
5	79.0	98.2	84.0	81.0	98.2	85.0
7	73.0	96.4	78.0	75.0	99.9	79.0

Table 1: Comparative performance evaluation for the performance parameter of Diabetes using Kill Herd Algorithm and Proposed.

CONCLUSION AND FUTURE WORK

In this paper modify the SOM classification technique using particle of swarm optimization. The particle of swarm optimization used for the structure and weight value. The optimal selection of structure and weight value increases the accuracy of class technique. The class technique imposed the two processes for the selection of structure and weight parameter. Modified SOM algorithm for classification of large data, can compute weights for views and individual variables simultaneously in the classification process. Result shows that the modified SOM algorithm shows better result in comparison of Kant's algorithm. The exiting two algorithms not controlled the level weight of class and loss some data during the grouping of class. The modified SOM algorithm is very efficient for large data classification technique The modified SOM algorithm is very efficient classification technique for large data. The algorithm used particle of swarm optimization for controlling the weight variable of class level generation during formation of class. The POS algorithm takes more time for the selection of estimated value of weight.

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