# Pattern recognition using neural network time series

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## Abstract

Pattern recognition mainly concentrate on identification of designs to identify the characterized by prefixed principle on a data. Classification of IRIS dataset has been taken to examine the petal and sepal size of the IRIS flower and to predict analyzing to which pattern the class of IRIS flower really belongs to. In this paper, the model has been trained with Neural Network time series analysis to recognize the pattern of IRIS flower. Pattern recognition is a field of cognate such as image processing and neural network .Pattern recognition mainly concentrate on identification of designs to identify the characterized by prefixed principle on a data. Classification of IRIS dataset has been taken to examine the petal and sepal size of the IRIS flower and to predict analyzing to which pattern the class of IRIS flower really belongs to. In this paper, the model has been trained with Neural Network time series analysis to recognize the pattern of IRIS flower. The paper applies neural networks for forecasting. The learning rule in neural network modifies the parameters for a given input to give a desired output. The proposed research work identifies patterns using supervised neural network training algorithm to accurately predict the behavioral pattern in IRIS flower species.

*Keywords*: *Pattern Recognition; Neural Networks; Time Series Analysis.*

## 1. Introduction

The process of identification in neural networks attributes the correct objectives. Patterns are identified by training the embedded. Pattern recognition is an important technique in Artificial intelligence learning networks. It can identify images or voice patterns. The aim of this paper is to understand the pattern recognition in neural networks time series analysis. In this paper, neural network is used for pattern recognition in two phases namely training and testing. During training phase the datasets are loaded and the model predicts to which pattern the IRIS flower belongs to. Time Series Analysis are used for many applications such as pattern identification and image processing.

## 2. Review of literature

There are many methods available in literature for pattern identification of IRIS flower species. IRIS flower pattern recognition methodology using neural network discovering patterns are discussed in [1]. Clustering using the neural network and k-means algorithm is presented in [2]. [3] gives the repository of machine learning databases. [4] details the machine learning algorithm for iris dataset. The IMPSO algorithm can effectively search the optimal combination values of the parameters as proposed in [5]. [6] investigated the simulation of back propagation neural network for Iris flower classification. The proposed model is applied on IRIS flower species to identify the patterns[7-14]. Specific task of clustering into groups in the same cluster[15-19]. Data adaption and algorithm adoption[20]. Dynamically time and scale for network [21-25].

## 3. Methodology

### 3.1. Neural networks

The paper applies neural networks for forecasting. The learning rule in neural network modifies the parameters for a given input to give a desired output. The weights are thresholded and updated within the network.
The dataset is taken to create a neural network that separates iris flowers into three species.
LOAD iris dataset. MAT loads these two variables:

[X,T] = iris dataset loads the inputs and targets into variables.
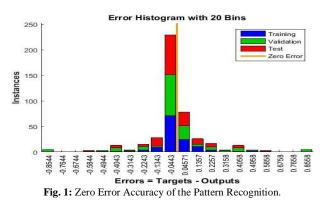
## 4. Experimental results



**Fig. 1:** Zero Error Accuracy of the Pattern Recognition.

Fig. 1 shows that zero error accuracy of the pattern recognition.

**Fig. 2:** Pperformance of the Classification Model on A Set of Given Input Data to Accuracy, Precision and Recall

Fig. 2 shows the performance of the classification model on a set of given input data to accuracy, precision and recall.
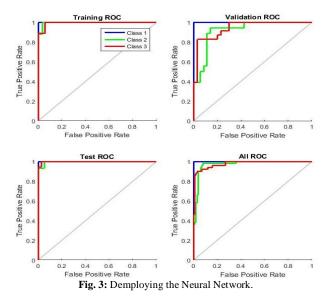


**Fig. 3:** Demploying the Neural Network.

Fig. 3 shows deploying the neural network. It is useful in knowing the accuracy of our model. Receiver operating characteristics is useful to find the evaluation of the matrix thresholding an exact calculation.
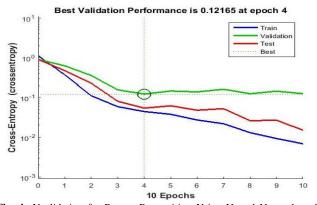


**Fig. 4:** Vvalidation for Pattern Recognition Using Neural Network and Time Series Analysis.

The above figure 4 shows better validation for pattern recognition using neural network and time series analysis. The training Mean Square Error is always decreasing. So, its validation and test MSE is fit for the presented model. There are totally 10 epochs and the best validation performance was in the 4th epoch and the value is 0.12165 as shown in Fig.4.
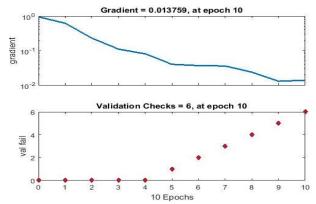


**Fig. 5:** The Time, Performance, Gradient and Validation Check Parameter.

Fig. 5 shows the time, performance, gradient and validation check parameter is used for testing and training time series data's.

## 5. Conclusion

The proposed research work identifies patterns using supervised neural network training algorithm to accurately predict the behavioral pattern in IRIS flower species. There were totally 10 epochs and the best validation performance was in the 4th epoch and the value was 0.12165. The presented approach shows the time, performance, gradient and validation check parameter was used for testing and training time series data's.

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