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EXTENSIVE FRAMEWORK FOR STOCK MARKET ANALYSIS

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Abstract: *Stock market is a most widely used purchase scheme promising great returns but it has some possibility of risks. An brilliant stock prediction models would be mandatory. There are so many techniques are available for the prediction of the stock market value. Some are: Data Mining, Neural Network (NN), Neuro Fuzzy system, Hidden Markov Model (HMM) etc. We outline design of the Neural Network model with its customizable parameters and salient features. A number of functions for activation are implemented along with multiple options for cross validation sets.*

Keywords: *Artificial neural networks, Multi-layer neural network, Prediction methods, Stock markets.*

1. INTRODUCTION

One financial market which has been thoroughly analyzed by different methods is the stock market. Lots of work has been done in mining the financial markets, with multiple researches having a common aim of predicting stock market trends. The most difficult challenge faced by analysts is modeling the behavior of human traders. Constant changing of their behavioural patterns has made predictions quite hard. To solve this problem, researchers have used a variety of approaches. A large group of researchers put the problem into a machine learning framework. Many of those researchers believed that historical trading volume and pricing gave enough information to predict future trends. Another group of researchers think that there are other sources which may have a greater effect on behavior than historical prices. They have

done various researches and evaluated different sources to prove their claims. However, there are various influential factors that lead to volatility in the stock market. Existing researches tendto focus mainly on some factors, while ignoring other ones. For example, the effect of both news articles and technical indicators are seldom analyzed in a single research model. Moreover, although existing researches mostly use a systematic way to select the companies for their empirical based study, the selection is biased towards large companies in well-known stock indexes. Accordingly, we will address these research gaps by analyzing the effect of both news articles and technical indicators in a single framework using companies of different sizes.
This paper focuses more on a conceptual model for the prediction of stock market trends. We employed service oriented architecture to allow flexible replacement of different analytical methods, such as mining algorithms on the data. To summarize, our primary contributions in this paper are:

- To propose an efficient stock movement direction prediction framework using various sources.
- To analyze the impact of different sources on companies with different sizes.
- To illustrate the effectiveness of the proposed model using real-world data.
- To analyze the impact of metric learning methods on stock market prediction.

2. LITERATURE SURVEY

A] Application of wrapper approach and composite classifier to the stock trend prediction:

So many researchers tried to predict the immediate future stock indices or prices based on technical indices with various mathematical models and machine learning techniques such as support vector machines (SVM), artificial neural networks (ANN), and ARIMA models. In that paper employs wrapper approach to select the optimal feature subset from original feature set cover of 23 technical indices and then uses voting scheme that mixes the different classification algorithms to predict the trend in Korea and Taiwan stock markets.

Disadvantages: In this paper they did not use the combination of different classifiers like as weighted voting and find other useful features besides the ordinarily used technical indices to achieve a better performance in stock market trend prediction application.

B] An svm-based approach for stock market trend prediction:

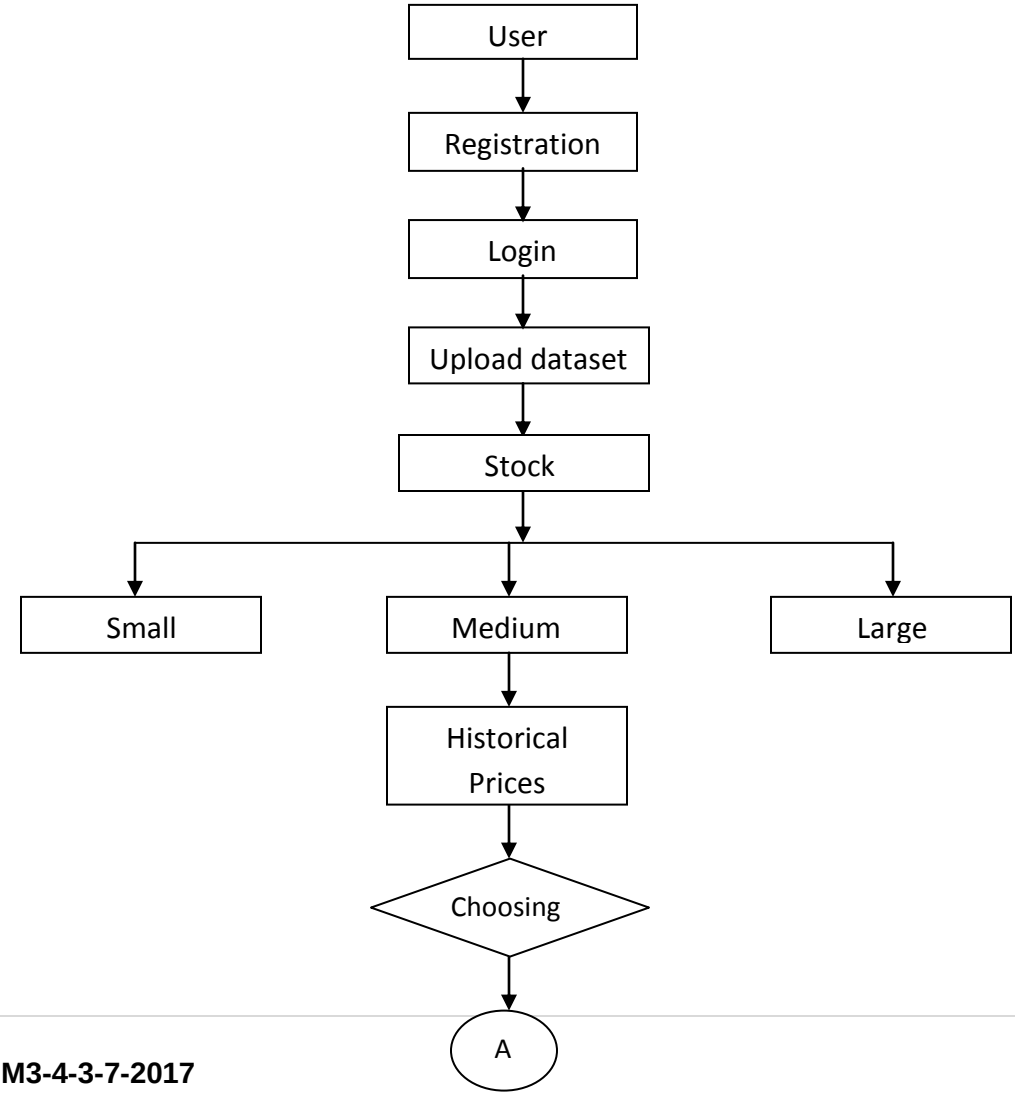
In this paper, Support Vector Machines (SVM) algorithm is work for to predict daily stock market trends: downs and ups. Purpose of that is to examine the effect of macroeconomic data, global stock markets, and technical analysis indicators on the accuracy of the classifiers. In this paper we use the empirical and theoretical approach to apply SVM strategy to predict the NIFTY closing level. We propose a prediction based on temporal correlation between commodities, global stock markets, and other financial products to predict the next day closing level (trend) of NIFTY.

Disadvantages: In this paper the theoretical analysis of the better performance on forecasting the constituents is a worth studying.

3. IMPLEMENTATION

Implementation Details:

Our aim to build a framework which can predict the stock for feature.



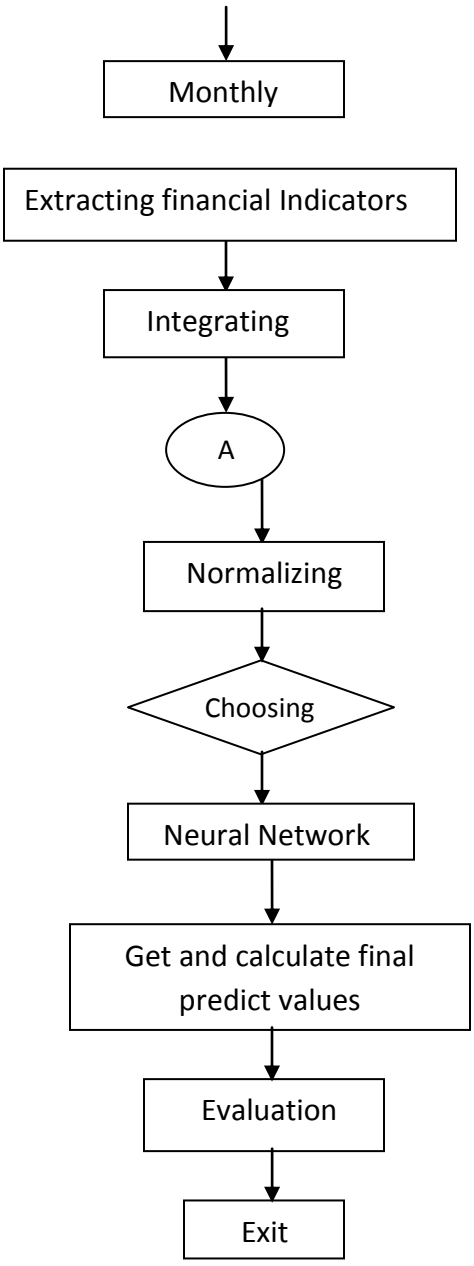


Fig 1.System Architecture Diagram

In System, First Process is User Registration and then Login. After Login User get Upload the Dataset and Calculate the Start, Close and Volume Values. By Using Neural Network, Calculate the Final Prediction Value.

By using following formula Calculate the Prediction Values:

Then to express the activation *ith* neuron, the formulas are modified as follows:

$$a_i = \sum_{j=1}^{N} w_{ji} x_j + \theta_i$$

where x! maybe the output of another neuron or an external input.

As shown in figure The proposals are treated as related work in considering different sources for stock market prediction. It is used a wrapper approach to choose the best feature subset of 23 technical indices and then combined different classification algorithms to predict the future trends of the Korea and Taiwan stock markets. Compared the application of four models including the artificial neural network (ANN) for stock market trend prediction. Two different approaches have been taken to provide the inputs for these models. In the first approach, ten technical parameters were computed based on stock price data while the second approach focused on representing these technical parameters as trend deterministic data.

Mathematical Model:-

System = S;

S = {I, P, O}

Success condition:

User will get prediction of the stock.

Failure Condition:

User will not prediction of the stock.

Input = Input

Input will be the query request for predict the stock.

P = Processing

In processing it takes a reference of dataset values. And according to that it will going to predict the stock prize.

O = Output will be the prediction of stock.

$$a_i = \sum_{j=1}^{N} w_{ji} x_j + \theta_i$$

where x! is the output of another neuron or an external input.

Algorithm:-

This project uses data processing technique to check historical information concerning share market in order that it will predict the desired values a lot of accurately.

Algorithm:-

1. Accept input sample
2. Perform its weighted summation.
3. Apply it to input layer neurons.
4. Process all inputs at each neuron by transfer function to get individual.
5. Hidden layer and repeat 1,2,3,4 steps pass it as an input to all neurons of for hidden layer neurons.
6. Pass output of hidden layer neurons to all output layers and repeat 1,2,3,4 steps to get final output.
7. Display the final output.

DESIGN SCREENSHOTS:

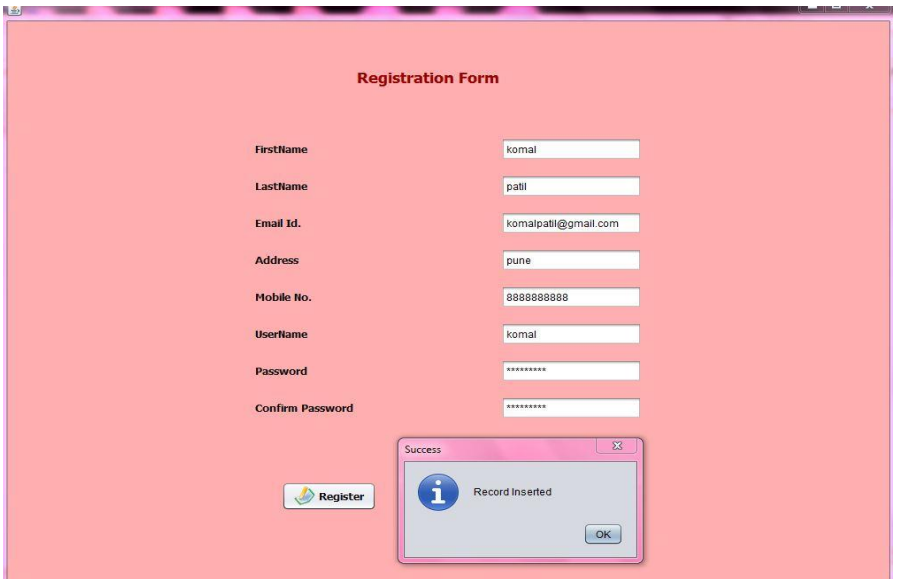


Fig 2. User Registration

User Registration: This is registration page. In this system first step is user registration then user login.

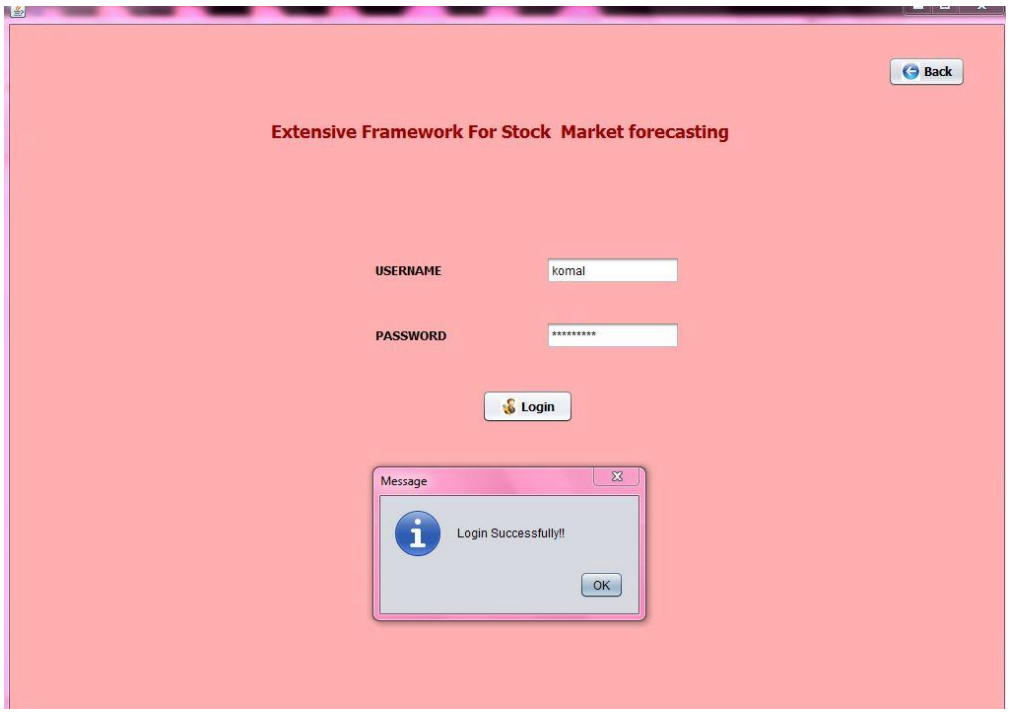


Fig 3. Login

Login Page: This is User Login Page. In this System First Registered User is Login, then after Login other System is work.

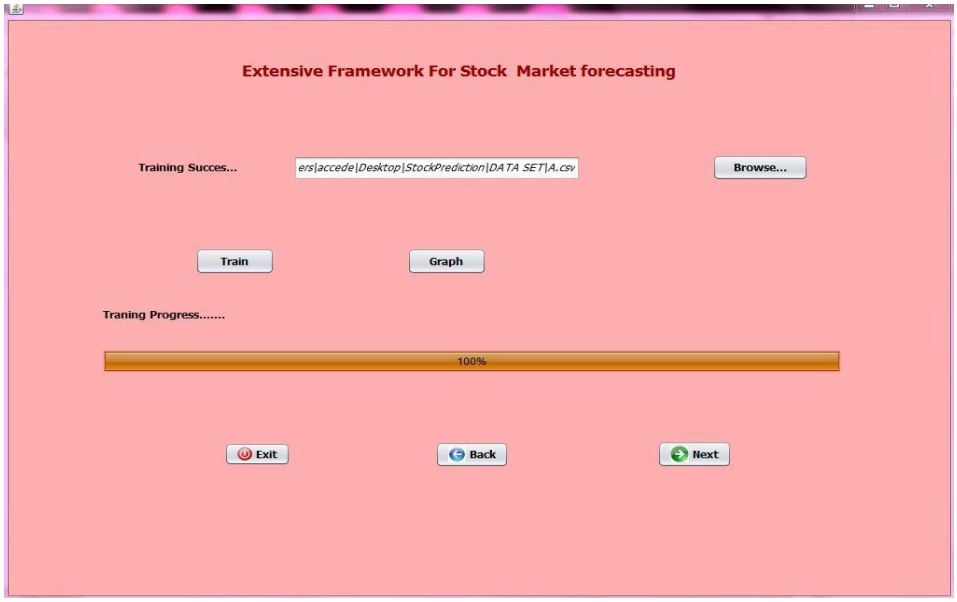


Fig 4.Train Dataset

Train Dataset: This is Train Dataset Page. In this page Upload the dataset and find the dataset values.

Fig 5.Dataset Graph

Dataset Graph: This is Graph Generation Page. First Dataset Successfully Trained and Generate the Graph.

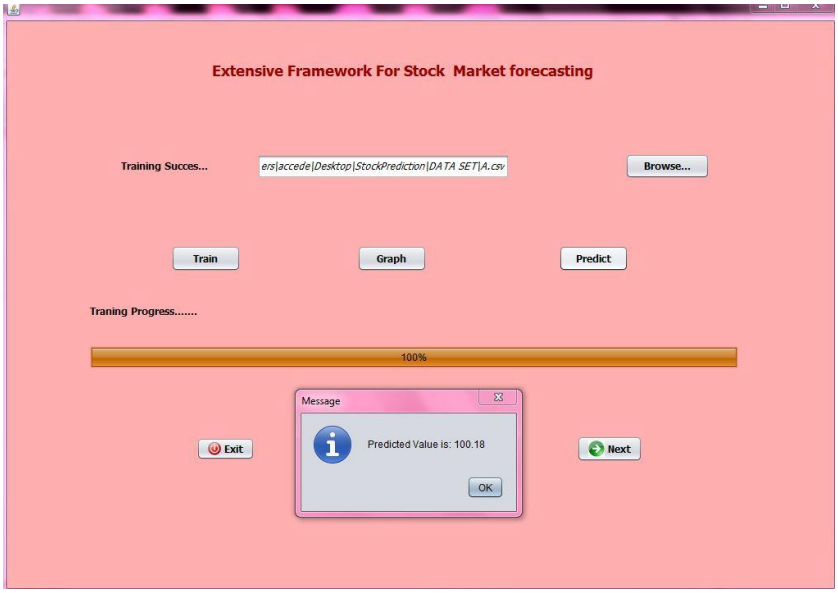


Fig 6.Predicted Value

Predicted Value: This is Upload Dataset Page. In This Page Upload the dataset and find the absolute predicted value in their dataset. By using following formula Calculate the Prediction Values: Then to express the activation *ith* neuron, the formulas are modified as follows:

$$a_i = \sum_{j=1}^{N} w_{ji} x_j + \theta_i$$

where x! maybe the output of another neuron or an external input.

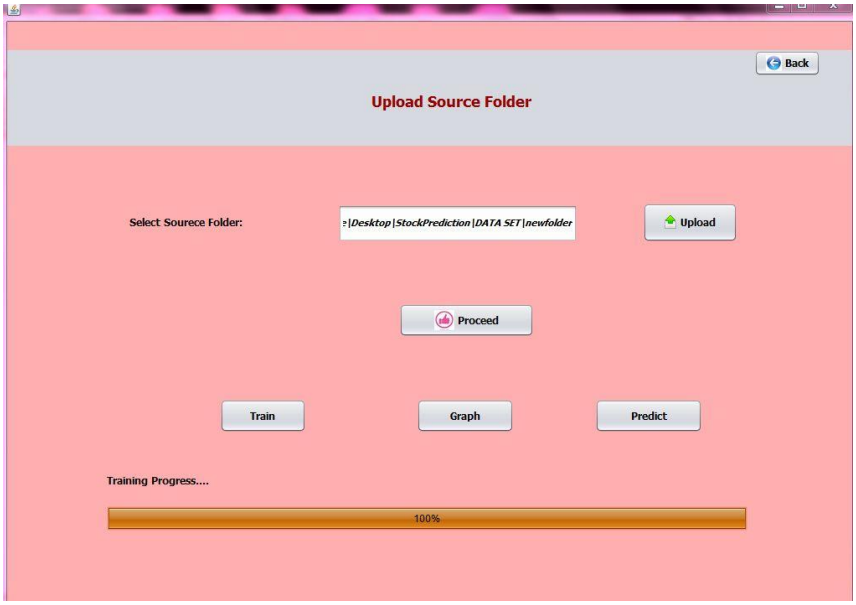


Fig 7. Folder Train

Train Dataset: This is Train Dataset Page. In this page Upload the dataset and find the dataset values.

Fig 8. Folder Dataset Graph

Folder Dataset Graph: This is Graph Generation Page. First Dataset Successfully Trained and Generate the Graph.

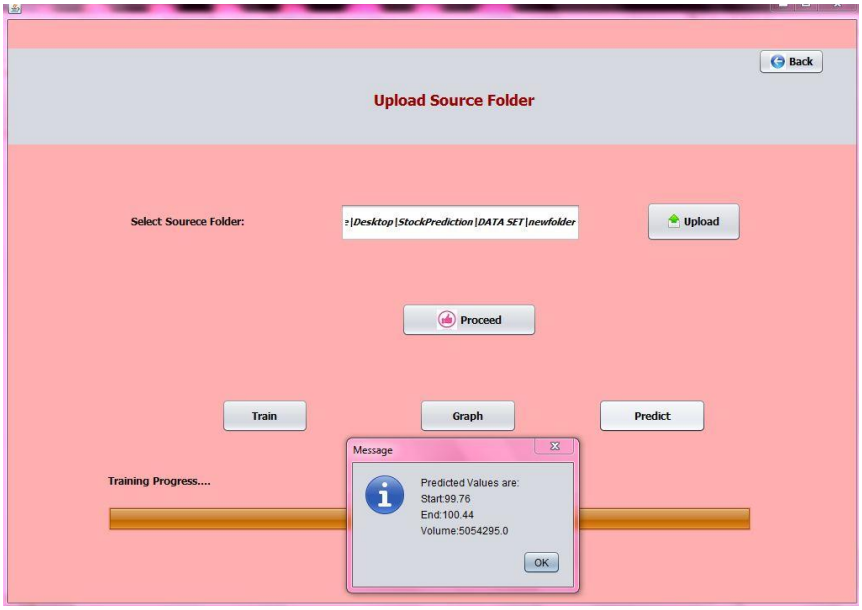


Fig8. Folder Dataset Predicted Value

Folder Dataset Predicted Value: In This Page Calculate the Start, End and Volume Predicted Values.

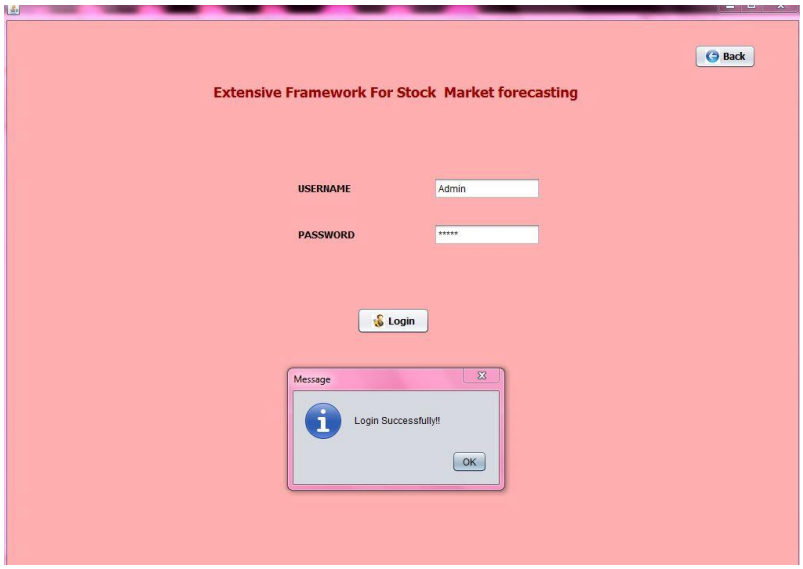


Fig9. Admin Login

Admin Login: This is Admin Login Page. In this System First Admin User is Login, then after Login Open the Admin Panel.

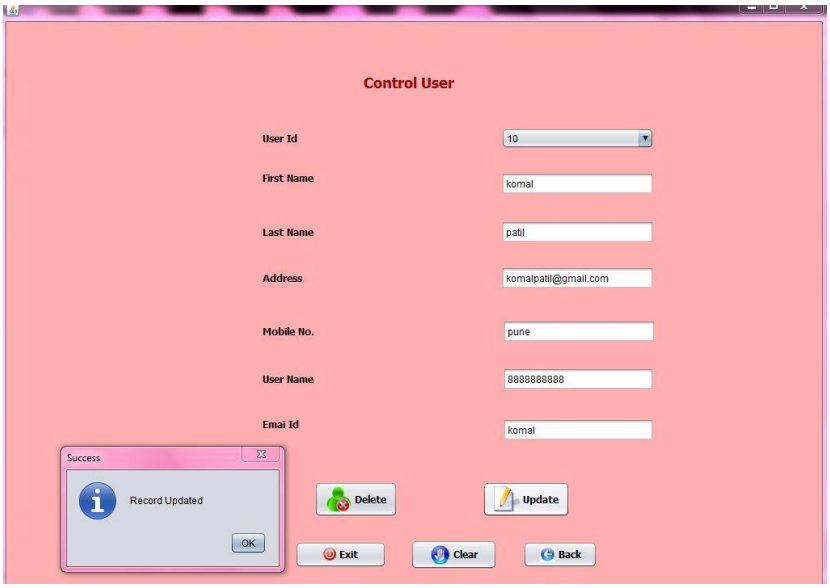


Fig10. Update User

Update User: This is Upload User Page. In this page Edit the User Profile and update the User Details.

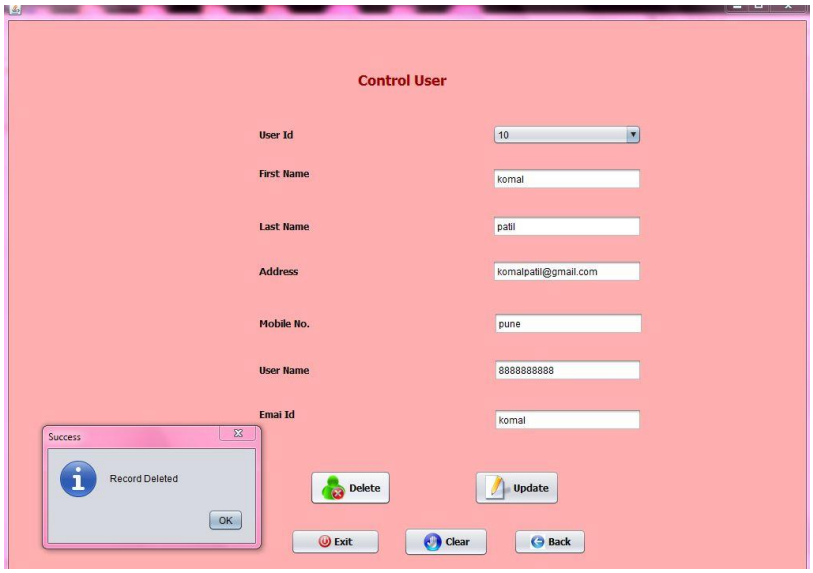


Fig11. Delete Users

Delete User: This is Delete User Page. In this page Delete the User Details in your database.

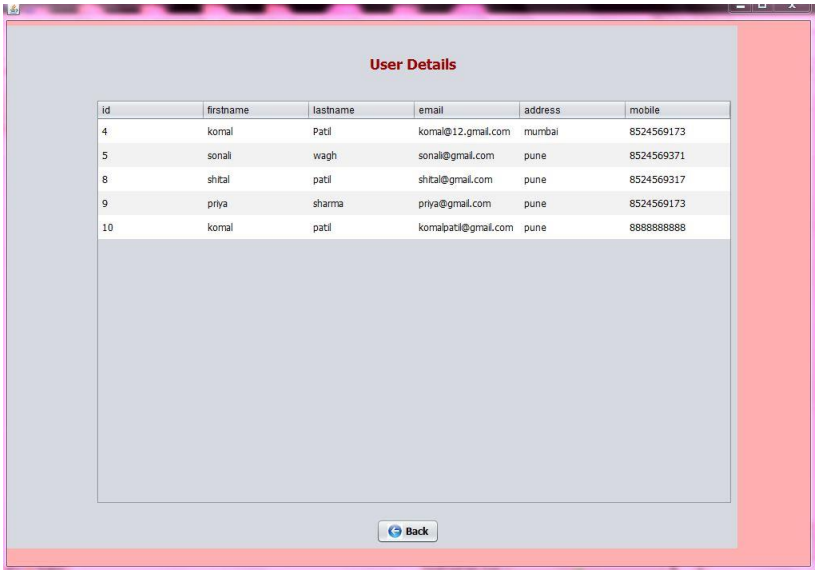


Fig12. User Details

User Details: This is User Details Page. In this Page, Admin Show the All Details of Users.

4. CONCLUSION

We proposed a framework to predict a stock price changes in future. This framework can be take a use of different sources and also use various machine learning techniques to train the model on stocks with different sizes. Using that framework, not only the power of metric learning based methods on stock market prediction is investigated, but also the impact of different sources on stocks with various ranks and sizes is explored. Experiments have been done on stocks in the Hong Kong market. Although most of the existing researches have used SVM to train the model for stock market prediction, we found that metric learning based methods can improve the results significantly. In addition, from the results, we found that adding news to the historical prices to feed the methods, will not be able to improve the results on all the stocks. Having a closer look at each stock showed that considering an extra source like news is mostly effective on larger and more popular stocks.

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