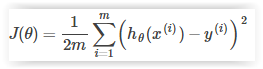
**SOLUTION**

**Model**:

Our prediction is based off a feature vector, linear regression is a reasonable method to solve this problem. Using the standard linear regression method for multiple feature attributes, we find a vector θ that minimizes the COST FUNCTION( J(θ) ) and makes the prediction y(n+1) = θ’x(n+1).



However, this algorithm does not capture the temporal correlation inside the data (for example, stock behavior one year ago is different from stock behavior now). Thus, we tried the idea of empirical risk minimization while trying to capture the temporal correlation. We modify the linear regression model by allowing the vector θ to change with time. So each time we try to a theta for after convergence for X(i) to X(i+10) feature sets, we use the updated theta for the next set of X(i+10) to X(i+20) feature sets.

We have used [open\_p,high\_p,low\_p,total\_v,tradesNo,trunOver,close\_p] as the feature list and the closed price as our target price. Octave is the tool used for computation and implementation of our model. Results are generated on the basis of continuously changing theta θ, which helps in predicting the future values. Finally after using gradient descent for around 500 data sets from 2014 to feb-2016, we generate the next day’s value using same theta. We also noted that initially the absolute difference between actual price and the price calculated by our model differed by 3-5% whereas later it changed only around 0.5-2.5%. That gave us confidence in using the latest theta for the predicting for coming days prices. On the basis of our results and some factors that we used to study, we have compiled results below (considering the risk factor, we are not putting all eggs in one basket).

**Cod**e: It has been attached with the submission.

**Prediction for next 10 days**:

**Britannia Inds : Fall** **44**

**Vedanta : Fall 66**

**St Bk of India : Rise 150**

**Nilkamal Ltd : Rise** **570**

**Aurobindo Ph. : Rise 236**

**TCS : Rise 222**

**Jet Airways : Fall 54**

**Intrasoft Tech : Fall 97**

**ShRenukaSugar: Fall 60**

**Yes Bank : Rise 74**

**Percentage of stocks in a portfolio:** Here we have used value system, that is calculated using below formula, and using that value the %age is decide in which the money should be distributed using their stocks.

**Total value=** **44+66+150+570+236+222+54+97+60+74=1573;**

Change\_predicted = ( [(AvgFeature) \* (theta)] – ValueOn26thFeb )

If LOSS:

if(less than 40)

Value = 1000 / (abs(Change\_predicted))

else

abs(change\_predicted)

If GAIN:

Value = (5)\* Change\_predicted

**Britannia Inds : 44**

**Vedanta :66**

**St Bk of India :150**

**Nilkamal Ltd :570**

**Aurobindo Ph. :236**

**TCS :222**

**Jet Airways :54**

**Intrasoft Tech :97**

**ShRenukaSugar:60**

**Yes Bank :74**

**TOTAL: 1573**

**Number of shares of each stock in a portfolio:**

**Britannia Inds : 2.8%**

**Vedanta : 4.2%**

**St Bk of India : 9.5%**

**Nilkamal Ltd : 36%**

**Aurobindo Ph. : 15%**

**TCS : 14%**

**Jet Airways : 3.4%**

**Intrasoft Tech : 6.0%**

**ShRenukaSugar: 3.8%**

**Yes Bank : 5.3%**

Working with the code submitted:

1) Unrar the submission.

2) Move the code folder to desired location.

3) Make the location as working/current directory in octave

4) Run the main.m

( you will see the computation being done)

5) To see the results, use below command to compare between the price predicted by our model and the actual price.

*printf("[%.1f ]\n", y - Y\_result)*

Further:

We got very less time to come up this solution, we also want to extend it using user data, and other feature to predict with better accuracy. Definitely model will improve in future by adding the user prediction using weighted majority.