**Abstract**

The main idea behind this project is to implement Neural Network models in Trading Simulation. Simulation is the imitation of any process. Trading simulation portrays the procedure of the stock market trading system in the real world, where we are implementing the Artificial Neural Network models to do the predictions. Artificial Neural Networks are the imitation of our real brain neurons, through which data or information flows. It has various structure in which there are input layer and output layer neurons. The data are fed to the input neurons along with the synaptic weights which flow through the several hidden layers in between and at last one or more than one output is received from the output layer neurons. So, in this project actually we are passing the predictions from the neural models through the trading simulation system to determine the performance of a trading strategy.

Various neural models can be build which can do regression and classification, one of the best is the Support Vector Machine which do regression and classification both. Actually, SVM is supervised learning model with associative learning algorithm for regression and classification analysis. After creating a svm object its being fed to neural model for predictions. Now, the prediction values are structurally and semantically numeric so, here comes the trading.signals() function which converts the numeric predictions into trading signals; sell, buy and hold. By seeing these trading signals a customer can understand whether he has to sell his stock or buy a certain stock or has to hold for a certain period of time to reach its profit margin. ANN has two output parameters: precision and recall. Precision defines the accuracy of the predictions and recall defines the probability of getting the same output if a certain input is being fed that means noise free predictions. On the basis of these two parameters the neural network model is chosen.

After the neural model is chosen and the predictions are done, the next step is to make some trading strategy which is needed to be simulate and see the performance of the trader. So in this project, policy1() and policy2() are the two functions where two respective trading strategy is defined and finally those trading strategies are implemented with the neural model, especially SVM in this case through the function trading.simulator() with the train and test set of data being fed to the model. After the trading simulation is done through tradingEvaluation() function we are being able to get the further stats of the trading process adopted by the trader.

Basically, the real life stock trading system maintains all the leverages of the trader through which they can understand the position of their stock. Same way, through this trading simulation system the performance of the trading strategy used by the trader is being depicted, where every output parameter is given a value from which the amount of loss, the amount of profit and the number of sales the trader can do are all deduced. Stock Market trading is an interesting field where millions of money are invested by the traders so they need to know where they are investing and how they are investing. For having the best accuracy if something like Artificial Neural Networks can be the best thing to implement and conclude the predictions which can also portray the efficiency and performance of the trader’s trading system through trading simulation and evaluation decreasing the amount of risks for investing the money.-