FOREX PREDICTOR

By

FOREX SYSTEM

DEPARTMENT OF DEPARTMENT OF NETWORKS

SCHOOL OF COMPUTING AND INFORMATICS TECHNOLOGY

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1.0 Introduction

Money is the most important and deciding factor in our day to day life and we should know how to use it efficiently. By predicting the exchange rate effectively, the vulnerability of the trade investment can be decreased which provide smooth international trade and most importantly bringing maximum profit to the investors.

2.0 Background to the Datasets

Foreign Currency Exchange market (Forex) is a highly volatile complex time series for which predicting the daily trend is a challenging problem. In this thesis, we investigate the prediction of the ' high ' exchange rate daily trend as a binary classification problem (two classes), with uptrend and downtrend outcomes. Foreign Exchange (Forex) market trend was predicted using classification and machine learning techniques for the sake of gaining long-term profits. Our trading strategy is to take one action per day, where this action is either buy or sell based on the prediction we have. We view the prediction problem as a binary classification task, thus this work is not trying to predict the actual exchange rate value between two currencies, but rather, if that exchange rate is going to rise or fall. In this project, we obtain the datasets from the federal reserve website of America. These datasets are traditional data sources classified as structured data generated by known systems and used in a known data analytics pipeline such as the wall street black box. Forex daily exchange rate values can be seen as a time series data and all time series data forecasting and data mining techniques can be used to do the required classification task. In time series analysis, it is always a challenge to determine the required history window used by the classification or forecasting system to do its prediction. In this thesis, an approach of providing features from multiple time windows ranging from one day up to 1825 days was taken. This of course results in a number of features larger than using a single time window. Processing of the raw time domain daily values is done to produce the basic features used in the feature selection and transformation steps. This processing involves calculation of technical analysis and other time and frequency domain features over multiple time windows. Our approach is to let feature selection and feature transformation techniques find the best set of features for the classification task. Feature selection techniques choose a subset of the basic features while feature transformation techniques find features in new projected spaces. In this thesis, two feature selection and six feature transformation techniques are used which all aim at finding feature subsets to enhance the classification performance.

3.0 Problem Statement

Foreign exchange for the past has been a hidden market in the country where the rates are only publicized in papers and over the televisions to few who can afford time to look through the media. This has been publicized with a high increasing rate without clear reason and so the public left out to ask why but with no answers. The proposed system predicts the intraday movements of a currency pair from the information available in the financial news-headlines. To predict the foreign exchange rate accurately, we proposed a data-mining model which uses machine learning. This project involves several processes of implementation. Like requirements gathering, Data collection, development of the architecture, pre-processing of data, data analysis and the evaluation are explained in chapter 3 in the methodologies.

4.0 Objectives

1. Main Objective

The goal of this project is to integrate the strengths of several methods to predict the top few most-traded forex pairs (e.g. EUR/USD, USD/JPY, etc.)

1. Other Objective
   * + - To carry out a preliminary study on the existing system used to ensure currency exchange
       - To design Build a user-friendly web application that allows users to view prediction results and visualize the trends via charts.
       - To carry out the testing process of the implemented system.

5.0 Methodology

To make this system more about solving the unexpected dynamics in the rates, we collected data from the population. A questionnaire was used in data collection as well as ODK (Open Data Kit) as a data collection tool to collect this information from the population. We principally relied on questionnaires during the data collection phase. We were able to administer questionnaires to more than 50 people and this was because we disseminated questionnaires by paper and the web through Google Forms. Every implementation has to follow system development lifecycle that are Analysis, Design, Development and Evaluate. In the process of Analysis, we first analyzed our main goal of predicting the FOREX accurately and efficiently. In analysis, we did several literature review which is discussed above, will help us to find out the best model for prediction, identifying factors that influences the FOREX rates, handling data for splitting test and train, and evaluating the results. In the data analysis, the requirements gathering are done to find the type of data, the availability of data, storage system, tools for processing, analyzing the data and visualizing the results. The collected data was analyzed to be able to attain consistency and reliability for proper modeling and implementation of the system. The data was studied to identify key user and system requirements. These were classified under functional and non-functional requirements.

6.0 Outcomes

* **Plot graphs.** The system should be able to print out a graph of all currencies in the different countries (one-week graph, monthly, yearly)
* **Create CVS.** It should be able to create a CVS data of different currencies that is downloadable. This further leads to data analysis of the different currencies. Determine which currency is better than the other.
* **Pick news about currencies.** Picking news data about what is going on about the currencies, the prevailing prices of different currencies i.e. which currency is at a high price and currencies which have low prices at a given time
* **Predict stock prices.** Predict the future stock prices. The system will be able to predict each currency in the future time. For example, it can determine whether a dollar will rise or fall in coming time

7.0 References

<https://www.federalreserve.gov/>

<http://www.nytimes.com>

<http://newsrss.bbc.co.uk>

<https://www.bou.or.ug/bou/home.html>