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Feasibility of support vector regression model in order to make an intelligent agent for forex trading

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Today forex market seems promising for trading, but a trader will suffer huge losses through incorrect predictions and losing opportune times in trading. As forex market is a highly fluctuating market, if a trader can predict it to the minute, there is a higher potential to make profits. Further, automating trading will be a solution to the losing of opportune times. In most of the researches, Support Vector Regression (SVR) has become a suitable technique in predicting time series like forex and in almost all of them, they have either used average per day data, average weekly data or average monthly data. This study identifies whether SVR is good for predicting per minute data and can be used to automate forex trading. The closing prices of per minute historical data of the three major currency pairs EURUSD, GBPUSD and USDJPY from 2012 to 2019 were taken for this study. The kernels of SVR linear, poly and radial basis function (rbf), were used to analyses the three currency pairs. They were studied by taking 70% of the first 7 years (2012 to 2018) as training data and the rest 30% as validation data and last year (2019), as a test to automate the prediction of future forex market trading. Gridsearchcv was used to find the best hyperparameters of kernels of SVR and they were evaluated by Mean Squared Error (MSE) and R-squared (r²) score. The linear kernel and the poly kernel did not give a good r² score (not even a 50% in almost every currency pair) as the market fluctuates heavily it cannot be predicted linearly or with polynomial features. So in this study rbf kernel was more focused as it gave a r² score of more than 96% for all three chosen currency pairs in both training and validating data as well as a very low MSE of around 0.0002 in EURUSD and GBPUSD. But when considering test data, all the answers were arbitrary worse. To thoroughly study, the back process was done two times taking years from 2011 to 2018 and from 2010 to 2017 for all three currency pairs, using the rbf kernel of the SVR as it gave promising results. Even then, more than 90% of r² scores were obtained for the training and validation data, and for the test data, it was arbitrary worse. Finally, this study showed that the forex market is a highly fluctuating one and unlike in other studies of average per day data, average weekly data and average monthly data, linear, poly and rbf kernels of SVR are unable to predict per minute data of the future and this is not suitable to use in an intelligent agent.

Keywords: Forex, SVR, Time series, Gridsearchcv