Forecasting a Stock Price - IBM Advanced Data Science Capstone Project.
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Model Evaluation & Visualizing the Results for the Linear Models

Forecasting a Stock Price using Linear Models such as LinearRegression, K-Nearest Neighbor(KNN), Support Vector Machine(SVM) and using RNN-LSTM as a Time Series Forecasting Model.

What is a Linear Regression Model?
To give you a simple answer. Linear regression makes an attempt at modeling the relationship between two variables by fitting a linear equation to observed data where one variable is considered to be an explanatory variable and the other is considered to be a dependent variable. It is the most basic and commonly used type of predictive analysis.

What is a K-Nearest Neighbor (KNN) Model?
Medium.com put it in the simplest term possible. KNN is a supervised learning classification and regression algorithm that uses nearby points in order to generate a prediction. It is said to be one of the most basic yet essential classification algorithms in Machine Learning.

What is a Support Vector Machine(SVM) model?
Similar to the KNN model, SVM is a supervised machine learning model that can be used for classification and regression. SVM is effective in high dimensional spaces. It is effective in cases where the number of dimensions is greater than the number of samples. It is memory efficient and is versatile.

What is a RNN-LSTM Time Series Forecasting model?
RNN stands for recurrent neural network. LSTM stands for long short-term memory network. Since time series prediction problems are difficult types of predictive modeling problems, recurrent neural networks are used in deep learning to train very large architectures successfully.

Reporting Performance of Model Evaluation for all 4 Models.

Model evaluation is a critical task in data science. This is one of the few measures business

stakeholders are interested in. Model performance heavily influences business impact of a data

science project. I have selected the following metrics RMSE, MAE, R2 because in my view they are best suited for the predictive models that I have worked with in this project.

Performance of Linear Models and RNN-LSTM Time Series Forecasting Model Metrics.

RMSE (Root Mean Square Error)
Linear Model root mean square error 2.4024554165180363e-13
SVM Model root mean square error 0.04632123250742317
KNN Model root mean square error 8.055662406275989
LSTM Model root mean square error 186.0728774117609
LSTM Model (Improved) root mean square error 104.88462191329695

MAE (Mean Absolute Error)
Linear Model Mean Absolute Error 1.938511161746562e-13
SVM Model Mean Absolute Error 0.04208701205917427
KNN Model Mean Absolute Error 3.361844693114426
LSTM Model Mean Absolute Error 116.32627308826572
LSTM Model(Improved) Mean Absolute Error 68.07768667865273

R2 or R-Squared Error
Linear Model R2 score 1.0
SVM Model R2 score 0.9999999971194898
KNN Model R2 score 0.9999128812353679
LSTM Model R2 score 0.911753314248435
LSTM Model(Improved) R2 score 0.9719614280456601